THE BUILDER

Incorporating ARCHITECTURE & THE BRITISH ARCHITECT

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NEWS SUMMARY

THE BIRTHDAY HONOURS LIST includes names associated with the industry. p. 680

THE CENTENARY of the late Temple Moore's birth is commemorated in a special article. p. 681

THE BRITISH ARCHITECTS' CONFERENCE at Norwich is fully reported. p. 682

MR. SAARINEN'S REVISED DESIGN for the US Embassy Chancery building in Grosvenor-square was made public on Tuesday. The old and new designs are now illustrated. p. 689

A PROJECT for a new town in Kent, to cost £20m., is announced. p. 702

TO ESTABLISH higher financial ceilings up to which firm prices may be quoted, while retaining a condition as to the period within which the work must be completed would be little better than an attempt to mislead the public, state FASS. p. 702

ECONOMICS AND THE DRAWING BOARD

ANOTHER Architects' Conference has come and gone. The delegates at Norwich discussed an urgent and profitable subject—the rôle of the architect in the economics of our industry—and, like other recent conferences, the subject stirred the mind and brought clarity and a sense of direction to ideas which for the most part had been no more than half-formed in the profession.

The rôle is seen clearly enough now, for the Conference faced squarely the fact that there is as much to be done through the architects' drawing boards as through the builder in raising the over-all efficiency and effectiveness of the industry. We have all been so busily interested since the war in finding how to improve the constructional side of building that we have largely neglected the influence of the design side. There are honourable exceptions, of which perhaps the schools programme is the most obvious, but it remains largely true that we have only touched the fringe of the influence on economics which can be exerted through skilful design, and it may easily prove to be greater than the constructional side can ever offer us.

Realisation of this is an all-important first step for the profession, but of itself it carries us not very far along the road. We must face the fact that between recognition of the responsibility and its full discharge lie many gaps in the information we need. These are excellent beginnings in the work of research organisation and in the willingness of quantity surveyors to look freshly at their part of the problem—the Institute was wise to bring some of them into this Conference—but these are only beginnings and as such are not yet being very rapidly absorbed into the profession's work. Worse still, perhaps, the schools appear to be doing practically nothing to inculcate this sense of economic responsibility in the student body. The Board of Architectural Education should look urgently at this matter.

Many references were made in the discussion to the value of design research, and it was evident that the work of the Nuffield organisation on hospitals, the BRS work on flats, and its forthcoming programme on factories are valuable steps, but are they enough ? In the apportioning of research resources, does design yet get its fair share ? This is clearly something that the Institute should satisfy itself about as soon as it can if the meaning of this Conference is what we believe it to be.

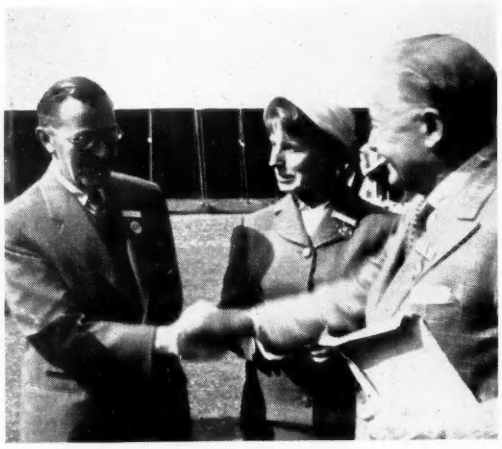
There has been much talk in recent years about architects and the leadership of the industry No one really questions that it is the natural place of the designer in theory, and the doubts that exist about it relate almost solely to his ability in practice to discharge the responsibility so that the country will get—and be seen to get—the best possible expenditure of its building resources. When this becomes evident, then the profession will be accorded a full measure of trust and confidence, and with it the strength and prosperity that go where competence clearly is to be found. Architects have their future largely in their own hands, and a firm grasp of architectural economics is the key. The Conference was certainly dealing with a vital issue.

Notes of the Week

Birthday Honours

THE architectural profession, the arts and the building trade are all represented in the Queen's Birthday honours list. Nothing will give his friends greater pleasure than the award of the OBE to Mr. Hope Bagenal, whose work for architectural science in general and building acoustics in particular has been of the greatest service to the profession he loves. As critic, lecturer and writer he has made an almost equal mark. Mr. E. F. Muir, for so long a prop in the Ministry of Works and now its Permanent Secretary, is made KCB, and Mr. F. J. Osborn's long battle for garden cities and town and country planning is recognised with a Knighthood. The CBE goes to Mr. Harold Conolly, County Architect to Essex since 1942 and a supporter of the principle of sharing out work to private architects, who still manages to give much time to RIBA affairs; to Mr. P. L. Leigh-Breese, the enlightened secretary of the Guinness Housing Trust; to Mr. Christopher Hussey, architectural editor of *Country Life*; to Mr. R. Kean, director of the Federation of Civil Engineering Contractors; and to Mr. T. Huxley Turner, the South Wales contractor, first chairman of Cwmbran New Town.

Among recipients of the OBE are Mr. Reeves Charlesworth, past-president of the Yorkshire Federation of Building Trades Employers; Mr. Alan Davson, who has done so much for the cause of quantity surveying in this country and abroad; Mr. T. H. Longstaff, county surveyor and planning officer of Huntingdonshire; and Mr. C. J. Saltmarshe, whom many will remember as a talented member of the A and BN staff in the early 1930's. MBEs go to Mr. R. J. Dowding, burgh surveyor of Denny and Dunpace, and to Mr. M. C. Oliver, the calligraphist. Mr. O. J. Thomas, trades union organiser of the National Association of Operative Plasterers is similarly honoured. To all these and other recipients (a list will be found on page 680) we offer our hearty congratulations.



AT THE BRITISH ARCHITECTS' GARDEN PARTY, NORWICH.—Mr. Harold Conolly (left) being congratulated by the President-elect (Mr. Kenneth Cross) on the award to him of the CBE in the Birthday Honours. With them is Mrs. Conolly. A Conference Diary begins on page 682

MR. F. J. OSBORN, Chairman, executive committee, Town and Country Planning Committee, who is created a Knight Bachelor in the Birthday Honours.

"Their Name Liveth"

UNDER this title a further book of photographic views of war cemeteries in Belgium, Holland and Germany (Part 2 of Volume II), has just been published by the Imperial War Graves Commission from 32, Grosvenor-gardens, London, SW1 (price 5s.). It comprises some 28 large illustrations beautifully reproduced in half-tone, accompanied by introductory articles and descriptive notes. Most of the cemeteries are of the recent war (the Groesbeek Memorial, unveiled by the Duke of Gloucester on June 2, is included), but some are of 1914-18, and a view is shown of the impressive Menin Gate Memorial, Ypres, erected on the line of Vauban's ramparts, from the designs of the late Sir Reginald Blomfield, RA. Most of the cemeteries have shelters or entrance buildings of dignified design, where visitors can rest or consult the registers of the dead. All are places of peaceful beauty, constantly and lovingly cared for.

East Anglian Buildings

AN EXHIBITION of East Anglian Buildings was appropriately on view at the Castle Museum during last week's RIBA Conference at Norwich. Consisting of large-scale photographs, engravings and water-colour drawings (including 15 by John Sell Cotman, lent by the RIBA), it gave a most interesting survey of the architectural riches of Norfolk and Suffolk from prehistoric times to the present day. An excellent illustrated and annotated catalogue of the exhibition is obtainable from the Curator of the Castle Museum, Norwich, price 3s. 6d. The exhibition remains open till August 26.

Centenary of Central Park

JUST a hundred years ago some 840 unsightly acres of Manhattan Island, lately consisting of swamps and rock outcrops infested with squatters and vagrants living in caves, tents and shanties, were converted into that place of picturesque beauty—Central Park. It was the first of America's great landscape parks, and Frederick Law Olmsted who designed it (and many others) admitted that he got the idea from Birkenhead Park, near Liverpool, laid out by Joseph Paxton in 1844. With its meandering roads and pathways set with lush greenery and rock-girt pools, it has changed little in the past 100 years and remains an astonishing feature amid a grid-iron setting of skyscrapers.

The site, purchased by the City in 1856 for about $5,500,000, has been often coveted by greedy speculators, who hate to see so much "idle land" in the heart of Manhattan. Hitherto all commercial assaults upon it have been ferociously and successfully resisted by New Yorkers, who know its value in terms of health and beauty even if its value as a building site is not to be computed.

COMING EVENTS

MONDAY, JUNE 11

BBC.—Talk on post-war Italian architecture by Joseph Rydwert. Third Programme at 7.35 p.m.

ROADS IMPROVEMENT ASSOCIATION.—Annual general meeting. Royal Automobile Club, Pall Mall, SW1. 12 noon.

TUESDAY, JUNE 12

EASTERN FEDERATION OF BUILDING TRADES EMPLOYERS.—Half yearly general meeting. Flixton Room, Samson and Hercules House, Norwich. 10.30 a.m.

WEDNESDAY, JUNE 13

SOCIETY OF WOMEN ARTISTS.—95th exhibition of painting, sculpture and crafts. Royal Institute Galleries, 195, Piccadilly, W1. Continues to June 29.

LMBA (CENTRAL AREA NO. 1). Annual "Brains Trust," Derry and Tom's Restaurant, Kensington, W.8. 1 p.m.

THURSDAY, JUNE 14

RIBA.—Annual general meeting. Address by Lord Strang, GCB, GCMG, MBE, Chairman, National Parks Commission, 66, Portland-place, W1. 2.30 p.m.

EAST HAM TECHNICAL COLLEGE.—Exhibition of work of the Department of Building, and prizegiving, Arragon-rd., East Ham, E6. 6.30 p.m.

FRIDAY, JUNE 15

INCORPORATED ASSOCIATION OF ARCHITECTS AND SURVEYORS, London and Home Counties Branch.—Luncheon and discussion on "The Nationalisation of the Building Industry," Connaught Rooms, Great Queen-st., WC2. 1 p.m.

SATURDAY, JUNE 16

RICS, JUNIOR ORGANISATION.—Tour of the Tower of London. Assembling at 12, Great George-st., SW1. 2.15 p.m.

BUILDING TEACHERS' CONFERENCE.—Summer Outing to Compton Wynyates, Warwickshire.

CORRESPONDENCE

Precincts of St. Paul's

To the Editor of *The Builder.*

SIR,—In your April 13 issue you published drawings and photographs of Sir William Holford's scheme for the precincts of St. Paul's together with a critical review by Mr. G. J. Howling; at about the same time the RIBA *Journal* also illustrated the scheme with a description and a statement of the basic considerations accepted by Sir William.

Since then a number of comments have been made: Prof. Pevsner on the BBC, Mr. Basil Spence at the RIBA dinner (reported in the RIBA *Journal* and in *The Builder*), and Mr. Westwood, president of the Architectural Association in a letter to the AA *Journal*, all speak strongly in favour of the scheme.

It appeared to me that Sir William had accepted basic conditions inadmissible when dealing with a building like St. Paul's. I therefore wrote to the RIBA *Journal* on the subject; to my surprise I received a letter from the editor telling me that since there was strong support for Sir William, to start a lengthy correspondence in the *Journal* would risk damaging the status of the profession. This seems to be such an extraordinary attitude to take up that I am asking *The Builder* to allow some free speech on this matter of outstanding architectural importance.

In my submission Sir William has been set, or has set himself, an impossible task when considered from an architectural point of view and taking into consideration the respect due to St. Paul's as one of the world's outstanding buildings—it is, if anything, an even finer building than St. George's Hall, Liverpool, and is worthy of an equally gracious setting. Also may I ask why should the Festival Hall on the South Bank be left in the open for all to see and St. Paul's be compassed about with blocks of buildings?

According to the RIBA *Journal*, the basic considerations accepted by Sir William were that St. Paul's is a dominant feature of the City and that overshadowing all ideas is the problem of replacing lost office space. I agree that St. Paul's is the dominant feature; why then is it to be packed round with a lot of buildings designed in the modern squalid manner? This is defended by Messrs. Pevsner, Spence and Westwood on the ground that to do this is the English tradition and appropriate to our way of life. Also we are told by Mr. Stanley Hamp (in the *Manchester Guardian*) that Sir William has preserved the most impressive vistas of our great cathedral.

Sir, there is nothing in our English tradition to say that we have got to surround a building like St. Paul's with other buildings in such a way that only vistas can be obtained; it is much too noble a building for such treatment, it is outstanding as a masterly architectural composition and it has got to be seen to be believed. Why does Mr. Basil Spence assume that the only alternative is to build round it period imitations in its own style? The fact is that any type or style of building built in the positions shown on Sir William's plan will be equally disastrous and, what is more, quite unnecessary. It is all very well to show bird's-eye views and rendered plans, but people do not see St. Paul's in this way—when seen from the ground all we should get would be Mr. Hamp's favourite vistas. One might just as well peep through a keyhole at selected sections of the Rokeby Venus, rewarding no doubt, but to get the full flavour one must see the lot; the same applies to St. Paul's.

No, Mr. Editor, I am afraid the inspiration for the scheme is office space. I have no doubt it will be popular with speculators and office-letting agencies, but what are the facts about office space? Town planners all agree that far too many people come into the City every day, health and traffic authorities condemn the waste of time and energy, and in the face of this we are to clutter up Wren's masterpiece with still more office-letting space.

I must add a word about the way of life argument; this is getting pretty low; we ought to take a careful look at the people who use that bit of cant. Maybe we do deserve these people and the way of life they talk about, but why should that be inflicted on St. Paul's Cathedral? Our way of life will die with us, buildings live much longer. Let us have some respect for St. Paul's even if we have none for ourselves.

T. BRADDOCK [FRIBA].

Orchard House,
14, Great Smith-street, S.W.1.

"Those Norwich papers on Architectural Economics persuaded me that two could practise as cheaply as one."

Wage Claims

To the Editor of *The Builder.*

SIR,—I note that the Amalgamated Society of Woodworkers recently decided to press for a further wage increase of 9d. per hour, and this in spite of the advice of their executive. The view is being widely canvassed that, if this came before the NJC next January and were granted, a major disaster would follow.

Must this be an automatic consequence? In official wage rankings, the building industry has lost way since the end of the war, and to restore it to a place higher up the scale would be no bad thing if new basic rates succeeded in attracting more keen young labour to the industry.

One inevitable consequence, apparently foreseen by the ASW Executive but brushed aside by the ordinary members, is that labour will at last become the dearest commodity on a building site and that employers (who by then may be looking for work) will be a good deal more careful what they take on in the way of labour. Mechanisation will be developed at a faster rate, not to assist the operative to do the same job with less trouble but to fulfil its real purpose—to step up production.

We are moving, in fact, towards a labour force of much higher quality but definitely smaller in numbers. Will the ASW leaders deny that every penny that is added to wages without proportionate extra production hastens the time when some proportion of their membership increasingly becomes redundant?

CURIOUS.

Asphalt Roofing

To the Editor of *The Builder*

SIR,—We have read with interest comments made by Mr. Pasini in your issue of May 25, and note the views he expresses regarding the effects of weathering, and particularly sunlight, on asphalt roofs, and the method by which these effects can be obviated.

Whilst we agree as to the methods of construction proposed and the treatment which will obviate crazing, we would not regard this as being fundamentally new. It is a form of treatment which has been known for 50 years, although it is not now practised as widely as it should be with the advantages which it would bring. Several of the old-established asphalt companies were applying marble chippings on all their asphalt roofs long before thermal insulation screeds were introduced.

We would endorse the suggestion that it is a method of treatment that can be used with particular advantage over thermal insulation materials. We feel it necessary, however, to express a word of caution about the general application of this process. It should be regarded as a high-grade type of finish requiring expert application.

C. W. FRY, Secretary,
The Natural Asphalte Mine-Owners and Manufacturers' Council.
94/98, Petty France, Westminster, SW1.

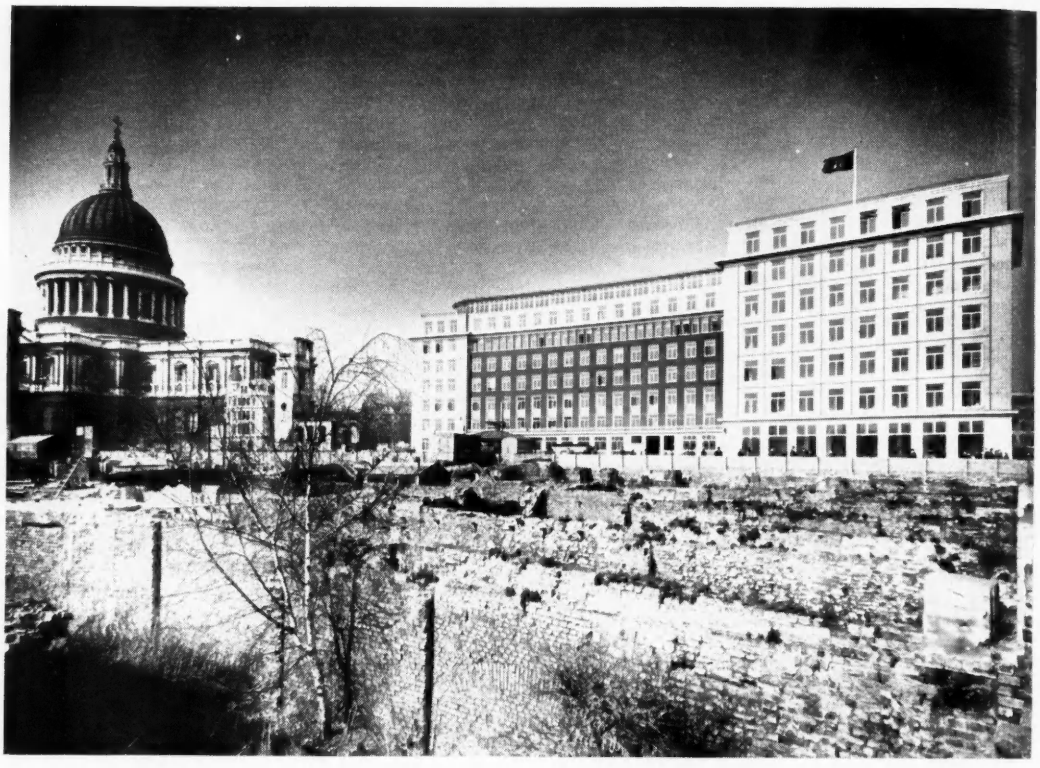
OBITUARY

T. G. Angell, LRIBA (Ret'd).

THE DEATH took place at his home in Gerrard's Cross on May 27 of Mr. Thomas Graveley Angell, LRIBA (ret'd), formerly of Mitre Court Chambers, the Temple. He was 76.

Award to Dr. Martin

THE Council of the Royal Institute of British Architects has unanimously decided to confer on Dr. J. L. Martin, FRIBA, the architect to the London County Council, the Institute's award for Distinction in Town Planning.



View from the south.

GATEWAY HOUSE, WATLING STREET, LONDON

for the Wiggins Teape Group

View from New Change.

TREHEARNE & NORMAN, PRESTON & PARTNERS, Architects

R. TRAVERS MORGAN & PARTNERS, Consulting Civil Engineers

TROLLOPE & COLLS, LTD., Builders

GATEWAY HOUSE, No. 1, Watling-street, London, EC4, the new headquarters of the Wiggins Teape Group, was opened by the Lord Mayor, Alderman C. L. Ackroyd, on Tuesday, June 5. Gateway House is the first new building to be opened on the war-devastated area east of St. Paul's Cathedral.

During the war the area around St. Paul's Cathedral suffered considerable devastation, and in order to take advantage of the possibilities provided by redevelopment the Corporation of London drew up a comprehensive plan for the whole area.

In order to ensure better traffic circulation around the area and improve the views of the Cathedral, the Corporation of London purchased large areas of the surrounding land. The new building sites so formed are being leased by the

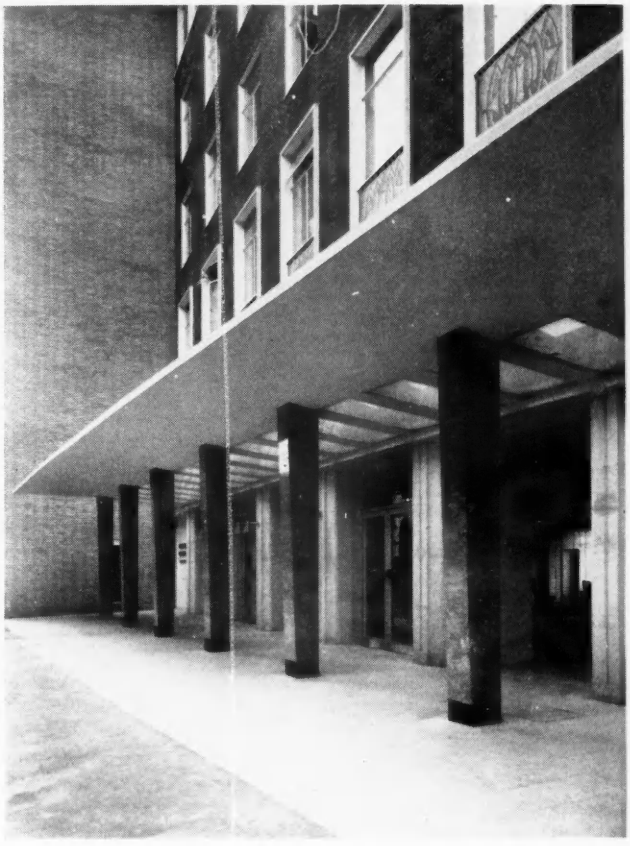
Corporation of London to developers, the sites immediately adjacent to the Cathedral being subject to stringent regulations as regards heights and block planning.

Site: The site of Gateway House is east of St. Paul's Cathedral, between Watling-street and Cannon-street, and is leased to Messrs. Trollope and Colls, Ltd., the building contractors, who have erected the building. Messrs. Wiggins Teape and Co. (1919), Ltd., paper manufacturers, utilise the building as their headquarters.

The building is 300 ft. in length and comprises a sub-basement, basement, ground and seven upper floors, and has a content of about 2,000,000 cu. ft.

Construction: The mass concrete foundations support a reinforced concrete frame, which has been specially designed to eliminate all beams, and so provide flush ceilings throughout the whole of the office area.

Finishes: With the exception of a portion of the ground-floor storey, the elevations are brick faced, the bricks being 2 in. handmade and of two contrasting colours, buff and black, with recessed joints. Specially designed mosaic panels are situated over the first-floor windows in the areas faced with the black brickwork.



Canopy and main entrance from Watling-street.

Entrance hall and reception area in background.

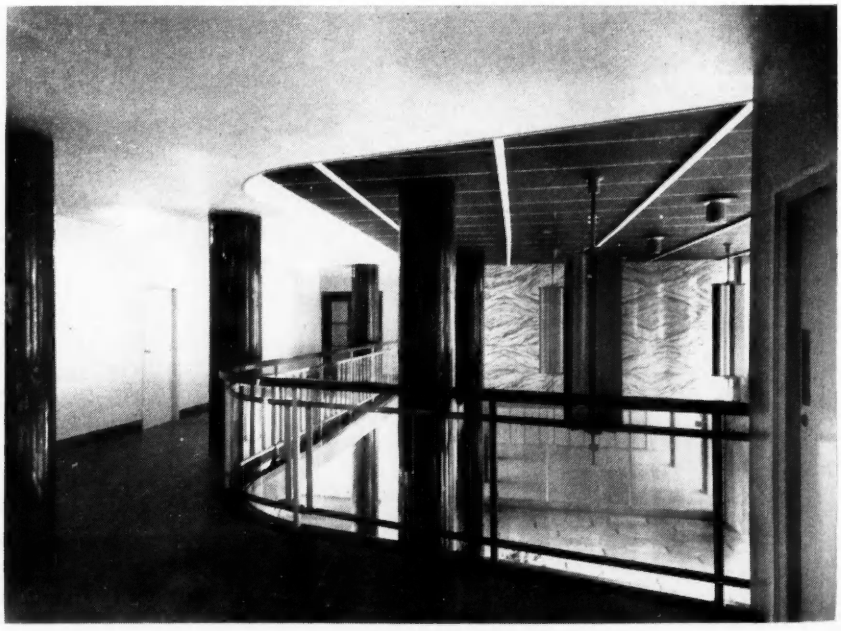
View of entrance hall, looking north-west.

These panels have been made in Italy and were erected as precast units.

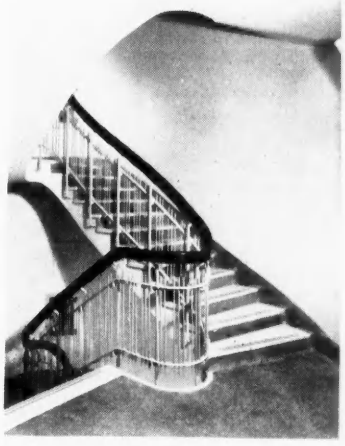
The underside of the main cornice at sixth-floor level is covered with decorative sheets, having a white design on a blue background. The smaller cornice at first-floor level has been similarly treated with glazed tiles to a special design. The top storey has been altered from the original sketch in so far as it now has continuous glass walling.

The large entrance hall is two storeys high with a balcony at first-floor level, the walls being lined with Arni and Cipollino marble and the numerous circular columns with Portoro marble. The ceiling has been painted damask red with a superimposed white pattern. The floor is heated by means of pipes embedded therein and is paved with Quarzite from North Italy. A large glass and concrete canopy, constructionally independent of the building, is situated outside the main entrance doors.

Services: The basement houses a garage, storage areas, and a large boiler-house for the oil-fire equipment. Canteen and recreation facilities are provided within the structure, together with Lamson tubes for the conveyance of documents around the building. Five large lifts are installed with auto-

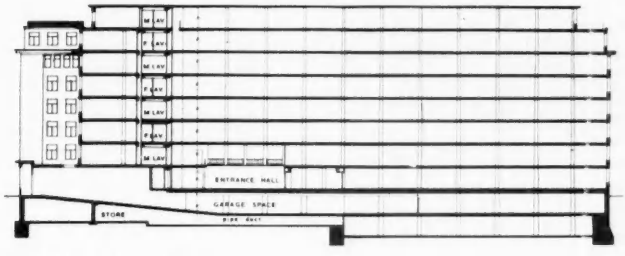


View of the entrance hall from balcony, looking west.

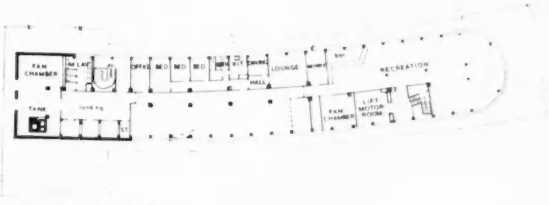


View of central staircase.

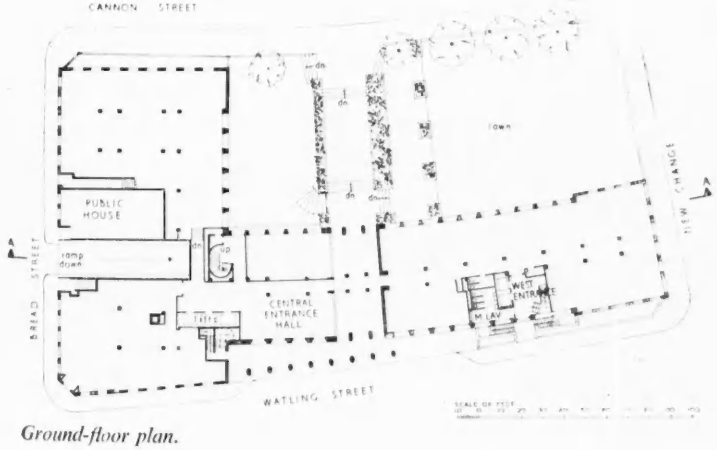
Triple lift foyer, first floor.



Longitudinal section.



Seventh-floor plan.



Ground-floor plan.

matic inter-connection controls.

The whole structure was designed with a view to economy in cost and speed in erection, both of which were realised in practice.

The builders were Messrs. Trollope and Colls, Ltd., who also carried out the reinforced concrete work, electrical installation, Portland stone facings, joinery work, plumbing and painting and polishing. Sub-contractors and suppliers were: heating and ventilating installation, Young, Austen and Young, Ltd.; asphalt tanking and roof, Highways Construction Co., Ltd.; cellulose spraying, R. Fox and Sons; cork insulation, Cork Insulation and Asbestos Co., Ltd.; decorative metal panels, Chatwood Safe and Engineering Co. Ltd. (Webslight Div.); dome rooflights, T. and W. Ide, Ltd.; entrance hall doors, balcony balustrade and external lettering, J. Starkie Gardner, Ltd.; excavation, Willment Bros., Ltd.; facing bricks (buff), Henry J. Greenham (1929), Ltd.; facing bricks (ebony), Richard Parton (Builders' Merchants), Ltd.; fire shutters, Shutter Contractors, Ltd.; flagpole, Piggott Bros. and Co., Ltd.

Floor and wall tiling, Carter and Co., Ltd.; glazing, Faulkner Green and Co., Ltd.; hose reels, The Pyrene Co., Ltd.; ironmongery, G. and S. Allgood, Ltd.; lifts, Hammond and Champness, Ltd.; lighting fittings, Heffer and Co., Ltd.; lightning conductors, W. J. Furse and Co., Ltd.; marble wall and column facings and mosaic panels, J. Whitehead and Sons, Ltd.; metal window and Venetian blinds, The Crittall Manufacturing Co., Ltd.; pavement lights, Lenscrete, Ltd.; plastering, J. H. Jenner and Co., Ltd.; pressed metal skirting, The Morris Singer Co., Ltd.

Quarzite facing and paving, slate surrounds, John Stubbs (Marble and Quarzite), Ltd.; roof and balcony rails, Kingsmill Metal Co., Ltd.; roller shutter to garage, Dennison, Kett and Co., Ltd.; sanitary fittings, John Bolding and Sons, Ltd.; scaffolding, Palmer's Travelling Cradle and Scaffold Co., Ltd.; sprinkler installation, Independent Sprinklers, Ltd. stair balustrades, S. W. Farmer and Sons, Ltd.; terrazzo paving, Art Pavements and Decorations, Ltd.; wood

Staff recreation room, seventh floor.

Staff dining-room, sixth floor.

block flooring, The Acme Flooring and Paving Co. (1904), Ltd.; wooden handrails, F. J. Lewis, Ltd.: York stone paving, Wm. Knight and Co., Ltd.

TENANT'S REQUIREMENTS:

General internal layout, Surveyor's Department, Wiggins Teape and Co. (1919), Ltd.: design of reception area in the entrance hall, caretaker's flat and recreation room, Trehearne and Norman, Preston and Partners: internal layout (special suites), W. J. Carpenter Turner, ARIBA, AADip; acoustic tiles, May Acoustics, Ltd.: anti-condensation ceiling, C. and T. (Pyrok Contracts), Ltd.; bar fittings, Gaskell and Chambers (London), Ltd.; board room decoration and furniture, Maple and Co., Ltd.; communication tubes, Lamson Engineering Co., Ltd.; cooking equipment, Benham and Sons, Ltd.; cork tile flooring, Armstrong Cork Co., Ltd.; counters and fitments, Falkus Bros., Ltd.

Directors' dining-room and lounge decoration and reception area furniture and carpet, Heal's Contracts, Ltd.; internal partitions, Triplewoods, Ltd.; internal telephone system, E. Shipton and Co., Ltd.; kitchen fittings, caretaker's flat, Built-in Fixtures, Ltd.; lettering, The Lettering Centre; managers' dining room, Catesby's Contracts and Exports, Ltd.; Neon sign, Claude General Neon Lights, Ltd.; and racking, Acrow Engineers, Ltd.

GATEWAY HOUSE, WATLING STREET, LONDON

BIRTHDAY HONOURS

Awards to the Building Industry

THE Queen's Birthday Honours, announced last week, contain the names of a number of those associated with the building industry.

KNIGHTS BACHELOR

F. J. Osborn, Chairman of Executive Committee, Town and Country Planning Association.

A. S. Quartermaine, CBE, MC. For services to civil engineering. President, Institution of Civil Engineers, 1951-52.

ORDER OF THE BATH

KCB

E. F. Muir, CB, Permanent Secretary, Ministry, of Works.

ORDER OF THE BRITISH EMPIRE

CBE

P. L. Leigh-Breese, JP (for services to hsing); F. C. Brown (chief hsing. and planning insp., MoHLG); Harold Conolly, FRIBA (county architect, Essex); W. J. Gilmore (asst. sec., MoW); Christopher E. C. Hussey (for services to architecture); Robert Kean, OBE (dir., Federation of Civil Engineering Contractors); A. B. Mann, OBE (chief mech. and electrical eng., MoW); T. H. H. Turner (lately chmn., Cwmbran Devel. Corp., Mon.).

OBE

P. H. E. Bagenal, DCM, FRIBA (for services in acoustics); W. J. Brown, FRIBA (prin. reg. arch., SW Region, MoHLG); Reeves Charlesworth (chmn., Reeves Charlesworth, Ltd., builders, Sheffield); A. W. Davson (sen. ptnr., Davson and Pritchard, chartered quantity surveyors); G. Edmond (City Eng., Singapore); R. J. Fitzmaurice (asst. dir. of contracts, MoW); G. C. A. Greetham (chief struct. eng., MoW); J. A. Hinks, JP (chartered surveyor to the Churches Main Cttee.); A. H. Layhe (manager (purchasing), British Insulated Callenders Cables, Ltd.); Gilbert Ledward, RA (sculptor—for services to the Royal Mint); T. H. Longstaff (county surveyor and planning officer, Hunts); I. S. Ungar (dep. dir. of hsing, LCC).

MBE

W. A. Ball (man., decorating dept., Ashby and Horner, bldrs.); A. Gibbons (higher exctive. offir., BRS); R. G. Leven (snr. wks. supt., Public Wks. Dept., Swaziland); C. T. Read (borough eng. and survyr., Maidenhead); E. Simpson (chmn. and man. dir., Berry Hill Brickworks, Ltd.); Miss M. R. Tabor (hsing. man., Stevenage Dev. Corp.); E. H. Williams (prin. scientific offr., MoW); R. J. Dowding, borough engineer, Denny and Dunipace; and O. J. Thomas, organiser, Nat. Assn. of Plasterers.

BEM

T. H. Kingston (carpenter, Royal Ordnance Factories, Min. of Supply); E. P. Lovell (clerk of works, War Office, Bedford); R. Seabrook (works tech. offir., BRS).

RIBA Prizes for Schools

THE RIBA offers annually for competition, between boys and girls of public and secondary schools, prizes totalling 20 guineas in value for the encouragement of interest in architecture. Two prizes are offered. A prize will be given for the best original essay of not more than 1,000 words illustrated by sketches dealing with building or group of buildings with which the competitor is personally acquainted; a prize will also be awarded for the best sketches or scale drawings of a building or part of a building in pencil, ink or colour. For the competition in 1956 all work must reach the Secretary, RIBA, 66, Portland-place, W1, from whom details are available, by September 28 next. This year's jury for the prizes consists of: Chairman, Mr. Evelyn Freeth, ARIBA; Mr. R. W. Paine, ARIBA; Mr. Edwin M. Rice, FRIBA; and Sir Hugh Casson, FRIBA, critic.

TEMPLE MOORE (1856-1920)

Designer of Fine Churches

By FRANCES COLLINGWOOD

THE centenary of the birth of Temple Lushington Moore, on June 7, was an event of some importance, for not only did this architect design some of the finest churches of his age, but his awareness of the contemporary scene in relation to the past led him to fuse the ideas of his immediate predecessors into the organic whole they had been seeking.

Born at Tullamore, King's County, Ireland, Temple Moore may be said to have brought his considerable talents to England when they were most needed.

The movement back to medieval Gothic, led by Pugin, had been followed by Sir George Gilbert Scott's efforts to bring this style into line with modern trends. It took Sir George's son, in collaboration with Temple Moore, to prove that it was possible for a sincere architect to use Gothic as a perfectly natural medium without straining after either of these preceding schools of thought. Moore did, in fact, steer architectural thinking away from foreign Gothic back to the English examples of this style.

As a lad Moore experienced a constant change of scene, and this probably acted as a stimulus to his young imagination. His father was an army officer who exchanged an Irish posting for a staff appointment in Glasgow, and it was at the High School of that city that Moore received the major part of his education. But he was not sufficiently robust to stand the hurly-burly of school life for long and, when sixteen, he was sent to Londesborough, Yorkshire, where the Reverend Richard Wilton undertook to coach him.

Moore remained in this peaceful backwater for three years. They were probably among the happiest of his life, for Wilton had a daughter who, a decade later, was to become Moore's wife.

Association with Scott

There was never any doubt as to what Moore intended to do with his life. Indeed, from Londesborough he went straight to the offices of George Gilbert Scott junior (son of Sir George) and began that association that was to last until the death of the teacher with whom he had so much in common.

In 1878 Moore set up his professional plate in Hampstead, but increasing pressure of work soon caused him to seek out an office more conveniently situated for the practice of his profession. He decided upon one in old Queen Street, Queen Anne's Gate, and thus embarked upon a career that never afforded him a slack moment all his life.

Although for the next twelve years he was to work so closely with George Gilbert Scott, Moore always kept his practice on a separate footing and never entered into partnership with him. As Scott's health deteriorated he came to rely more and more upon his brilliant assistant's ideas. So complete was the sympathy that bound the two men that a large measure of doubt has always existed as to which of them was responsible for some of the designs executed.

When in 1890 Scott was obliged to retire, Temple Moore continued to carry out his master's ideas, and it was only gradually that he allowed his own artistic integrity to bring these to the maturity they had been awaiting. To think in Gothic became for Temple Moore a spontaneous expression of belief and he created churches as authentically lovely as any that graced the true Gothic Age. Good taste was his sole criterion.

Simple Exteriors

The main characteristics of his art may be recognised in the simple exteriors that enclosed such immensely dignified aisles and lofty arcades. He was fond of building a large chapel behind the high altar, which was generally flat-roofed and contained some excellent windows. In the main he preferred a vaulted roof, and small, modest towers.

Typical of Moore was his use of materials, in which he showed special skill. That he was indeed an all-round artist may also be noted in his imaginative use of colour, and his handling of detail. His increasing reputation as an architect brought him into contact with non-ecclesiastical buildings as well and, although his fame rests mainly with churches, his touch may be recognised in a number of domestic buildings.

Among the most important churches designed by Temple Moore are the following:—All Saints, Peterborough (1885-1903); St. Peter's, Barnsley (1892-1911) and St. Wilfrid's, Harrogate (1905-1913), both excellent examples of his style at its grandest; St. Augustine's, Hull (1892); St. John's, West Hendon (1896); St. Mark's, Mansfield (1897); Sledmere, Yorkshire (1897-1898), the church with the richest exterior; St. Cuthbert's (1901) and St. Columba's (1905), Middlesbrough; St. Wilfrid's, Lidget Green, Bradford (1904); St. Luke's, Well Hall, Eltham (1907); St. Margaret's, Leeds (1907-1909); St. Anne's, Royton, Lancashire (1908); Uplands, Stroud, Gloucestershire (1908-1910); All Saints, Tooting (1909); St. Cyprians, Longsight, Manchester (1914); All Saints, Basingstoke (1915-1917), the only one with a clerestory; and the Anglican Cathedral, Nairobi (1914).

The architect's touch, at its most delicate, is to be seen in the chapels he designed for Pusey House, Oxford, and the Bishop's Hostel at Lincoln, and in the churches of St. Wilfrid's, Harrogate, and All Saints, Tooting, the last named being a splendid building, almost of cathedral proportions. About sixty other churches owe their restoration and additions to Moore's ingenuity, and in many of these he was responsible for the furniture and decoration.

Bilbrough Hall, near York, and Southill Park, in Berkshire, are among the several "stately homes" that owe their existence to Temple Moore; while he designed some ten parsonages.

When he was not at work upon some new building Moore would carry out alterations and additions to old ones. Among the many houses he serviced in this way are Warter Priory and Allerton Hall, Yorkshire. Particular praise is due to him for his brilliant restoration work on the Treasurer's House, and St. William's College, York.

Finally, mention must be made of the nave of Hexham Abbey, which he began to rebuild in 1902, and which took six years to complete; the Hostel of the Resurrection, Leeds; the Court House at Helmsley, Yorkshire; a hospital at Woodhall Spa; and various schools and parish halls.

Temple Moore's intimate association with George Gilbert Scott junior had a fitting sequel in the life of yet another member of this famous architectural family. Sir Giles Scott was articled to Moore, thus forging more strongly the Scott-Moore link to which English architecture owes so much.

Temple Moore died at Hampstead on June 30, 1920. He had suffered a grievous blow only two years before in the loss at sea of Richard, his only son, after the sinking of the SS Leinster. He was a promising young architect who had helped his father in much of his later work, and had bid fair to carry on the Moore tradition. It is probable that this tragedy hastened Moore's end, for he was only 64 at the time of his death.

COMPETITION NEWS

New Technical College Buildings, Paisley, Scotland

THE Governors of Paisley Technical College invite Architects registered under the Architects' Registration Acts and resident in Great Britain, Northern Ireland or the Republic of Ireland, to submit in competition designs for new Technical College buildings in Paisley, Scotland. The Assessor is Professor R. Gardner-Medwin, FRIBA, MTPI. The premiums are (1) £1,500; (2) £1,000; and (3) £500. Last day for submitting designs: Noon, March 27, 1957. Last day for questions: September 3, 1956.

Conditions from J. and A. Gardner, Clerks to the Governors, 3, County-place, Paisley, Renfrewshire, on payment of a deposit of £2. An applicant for the conditions must state his registration number or the number of the receipt issued to him by the Architects' Registration Council in respect of the admission fee.

Concert Hall, Trinidad

THE COMPETITION for the design of Trinidad's Community Centre Concert Hall, to be built in the King George V Park, Port of Spain, has been won by Mr. Colin Laird, DipArch, ARIBA, 9, St. Clair-avenue, Port of Spain. Second is Mr. O. G. Chase, c/o Anthony Lewis, FRIBA, 6, Wainwright-street, Port of Spain. Third were Messrs. Mence and Moore, A/LRIBA, of London and Port of Spain. Premiums of $1,500, $500 and $250 were offered. The estimated cost of the project is $220,000. The assessor, Mr. Ronald Firth, ARIBA, reports that 12 designs had been received. The competition was limited to architects practising in the West Indies.

The President (centre) with Mr. Howard Lobb (left) and Mr. Humphrey Boardman, President of the NNAA. To the right is Mr. C. J. Tomkins ("Tommy") the Hon. Secretary of the NNAA, whose Conference arrangements put all in his debt.

Looking Back on Norwich

A CONFERENCE DIARY

From Our Own Representative

IF there have been more successful Conferences than that which ended on Saturday last at Norwich, they cannot easily be recalled. Kindly hosts, perfect weather and the charm of the city combined with three excellent papers on the Conference theme—Architectural Economics—to make an event both pleasurable and profitable. The only ones to be mildly disappointed were those who had laid modest bets that rain, as usual, would overtake the Garden Party, but even these lost their money cheerfully.

All but a record attendance for a Conference was installed in the City by the Wednesday evening, or nearly so, for accommodation was at a premium and some of the later arrivals found themselves established in some of the smaller villages on the outskirts of the City, and two as far off as Great Yarmouth. But driving a dozen miles on a fine June morning through Norfolk lanes is no hardship. In the event, all got bedded down somewhere, and that, as the President remarked in his inaugural address, was the main thing. Mr. Robert Bond and his committee did a fine job here, as also in organising the reception and dinner.

First move was to pick up the Conference badge and handbook from the Assembly Rooms. For many this was the first chance of seeing the work which Mr. Rowland Pierce had done to restore Thomas Ivory's beautiful building, work which the Conference Handbook justly describes as "skilful and masterly." Now an arts centre, Norwich owes a debt to Mr. H. J. Sexton, who acquired the Rooms and, after restoration, handed them over to a Trust.

The Handbook had been beautifully produced by Mr. Donovan Purcell and his committee, and will be treasured by those fortunate enough to have a copy. Just enough is shown of Norwich and Norfolk architecture to whet the appetite for more, and those who went on the tours were able to build on what they had read.

The Assembly Rooms were the setting for the first of the events, a reception on Wednesday evening by the President of the Norfolk and Norwich Association of Architects. Humphrey Boardman adds to other accomplishments that of being a Rowing Blue (Cambridge, of course, as befits a good East Anglian), and the reception had something of the cheerful character of a Bump Supper—equally hilarious if slightly less vinous. On view was an exhibition of recent Norfolk architecture, organised by a committee of which Mr. Lionel Smith was chairman. By this time the ice was well broken, and people were in the mood for—if not work, then for watching men at work.

They had their chance next morning at the inaugural meeting held in the Stuart Hall. A building crammed on ground floor and balcony waited until a quarter of an hour after opening time, when the President led his speakers and supporters on to the platform and announced that he had lost the Lord Mayor but that they would start on the papers. By the time he had finished delivering his inaugural remarks, news had come that the Lord Mayor, due to a slip in the City Hall's staff work, would not after all be coming to give the traditional welcome. Bad luck, we felt, but on to work.

The speakers, assuming with a confidence which they did not perhaps fully feel that the papers circulated in advance had been read and digested, presented short summaries. They were followed by two invited comments from quantity surveyors—both useful, though one could have been more audible, by which time it was after midday. Only a few from the body of the hall got a chance to speak, and much of what was said was wide of the point, though a touch of typical Howitt humour from Nottingham and a thoughtful contribution from Mr. Clifford Culpin helped to arrest the decline.

The Garden Party

After lunch, the Garden Party. Glorious sunlight, the lovely garden of the Bishop's Palace and the geniality of the Bishop himself made a combination which could hardly fail. The settled weather brought out the Conference ladies in their gladdest rags, and very charming they looked. The male population fetched ices, talked shop to anyone who would listen and exposed enough film to go at least three times round the Castle. Mr. Lobb and Mr. Feilden surprised themselves and everyone else by climbing up to the topmost platform in the Cathedral spire to look at the view. Harold Conolly all but lost the use of his drinking arm with the congratulations heaped on him for the CBE, announced in the morning's Honours List, while Mrs. Conolly stood approvingly by, looking charming in a new suit which, as she sagely remarked, she thought the occasion deserved. And all through the afternoon the Norwich hosts, with the genial and tireless Theo Scott in the van, moved among the visiting members seeing to their comfort and entertainment.

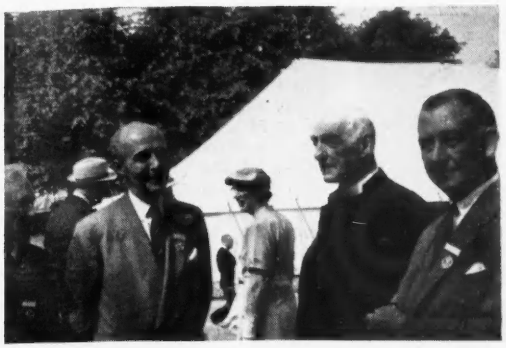
In The Cathedral

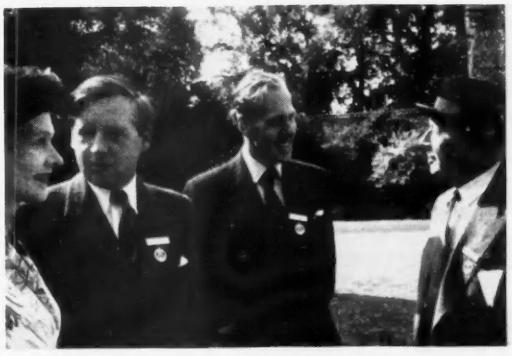
Just before five o'clock, members moved into the Cathedral—more properly the Cathedral Church of the Holy and Undivided Trinity—for evensong which had been specially arranged for the Conference. Breathtaking in its austere beauty, the building can never have looked better, and the westerly sun struck into the transepts filled with worshippers. Here the arts of the architect, the sculptor and the stained glass worker were joined by the arts of music, in the shape of the Cathedral choir which sang finely to music played by the Cathedral Organist, Mr. Heathcote Statham, son of H. Heathcote Statham, sometime Editor of *The Builder* and also the author of a standard work on the organ. The second lesson was impressively read by the President, and the Dean's address took suitable account of the audience's connection with architecture. Some must have felt that this service alone made their visit to Norwich worth while.

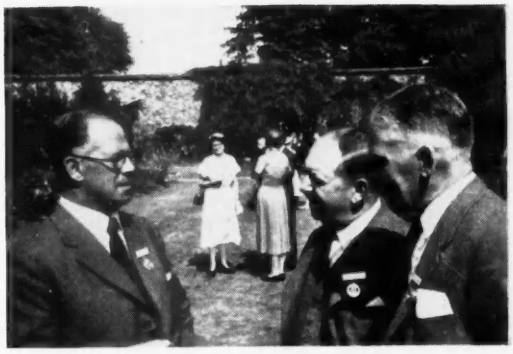
On the Thursday evening to a reception by the Lord Mayor and Corporation at the Castle. This time there was no mistake, and Norwich's first citizen nobly did his stuff in welcoming the guests. From the surrounding streets one can have no idea of the size of the Castle interior, and certainly none of the interest it holds. The galleries are used as a museum of Norwich life, where not only relics of the past but examples of modern crafts are displayed. In addition there is the superb collection of Crome and Cotman paintings bequeathed by a member of the Colman family to the City. These alone made the evening for many, and there was dancing forbye.

Next morning it was a case of back to work. There were a good many empty seats in the Stuart Hall for which the counter-attractions of the day trips no

Messrs. Edward Forster, Roger Norton and Anthony Pott compare notes on the opening session.







Top: Mr. Theo Scott, Mr. J. Nelson Meredith, the Bishop of Norwich and Mr. Robert Bond, at the Garden Party. Centre: Mr. and Mrs. S. Rowland Pierce and (right) Mr. and Mrs. Lesslie Watson. Below: Mr. Howard Lobb and (right) Mr. Kenneth Cross with Mrs. Harold Conolly. Mr. Pierce restored the Assembly Hall, scene of the reception on the Wednesday evening.

Top: Four Borough Architects at the Garden Party. From left to right: Mr. F. G. Southgate (Walthamstow), Mr. H. S. Jarratt (Hove), Mr. T. E. North (West Ham) and Mr. S. A. G. Cook (Holborn). Centre: Mr. and Mrs. James Cubitt, Mr. J. Fletcher Watson and (right) Mr. Frank Yerbury. Below: Mr. J. G. Davies, Cllr. W. A. J. Spear and Mr. C. H. Thurston.

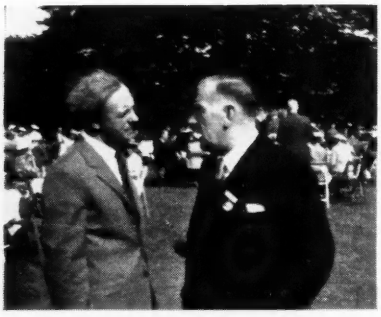
Three Norwich City Architects, past or present, with the Bishop of Norwich. Left to right they are: Mr. J. Nelson Meredith (now Bristol City Architect), Mr. L. Hannaford (late Norwich City Architect) and Mr. David E. Percival, the present holder. The other picture shows (from left): Mrs. Edward Forster, Mrs. Ian Leslie, Mr. G. Grenfell Baines, and Mr. and Mrs. Roger Norton.

Mr. Bryan Westwood (finishing his ice) and Mrs. Westwood. To the right is a Birmingham contingent, Mr. A. G. Sheppard Fidler, the City Architect (on right), and Mr. J. R. Sheridan-Shedden, the Education Architect.

doubt were in part responsible but also the rather dull start made the previous morning. But this session made full amends, after Mr. Grenfell Baines had given it a flying start with a Lancashire mixture of humour and good sense. All the contributions were on the ball and though too many suggestions were made to tie up into any neat parcel, there is much that should be closely studied by RIBA committees in the next few months. The papers and discussion will repay

Mrs. Boardman kindly provided tea.

And now for the Conference banquet. This was held in the Samson and Hercules House opposite the Cathedral, a somewhat odd mixture of anteroom vaguely Carolean but altogether pleasant, and a dining space which some may not have realised is built over a swimming bath, and is now used as a dance hall. The President and Mrs. Aslin shook hands for the third time with members. The President's unruffled good humour and



Left : Dr. J. L. Martin and Mr. Eric Bird. Right : Mr. and Mrs. Philip Pank.

study, and more about this will be said in a leading article. Here it may be noted that this is the first Conference within your correspondent's memory in which a member made his contribution in the form of a song. Fortunately for Mr. Bryan Westwood the hall is licensed for singing and dancing. There was a good deal of talk at this session about the Elemental Bill. Fortunately Mr. Spragg doesn't blush easily.

wit has been of the greatest advantage to the Conference, as indeed it has proved throughout his Presidential term, and here and on all public occasions he has had the greatest support from Mrs. Aslin, who has endeared herself to everyone. Mr. and Mrs. Boardman also lent the President unswerving support, though the athletic Mr. Boardman is less to be pitied as being likely to come off well in any handshaking contest.

The dinner was notable for excellent speeches. Mr. Saxon led off in a grand effort in which sense and nonsense were nicely mingled. The Lord Mayor made as good a speech as a first citizen can ever have done. Tolerant, informed and witty, he not only built up his city but must have added considerably to his reputation. Sir Bartle Edwards and the President pulled each other's leg gently, though Mr. Aslin had the last word by congratulating Sir Bartle, as Chairman of the County Council, on having the good sense not to worry about architecture but to leave it to the County Architect.

Mr. Humphrey Boardman proposed the guests. Always a difficult job when there are so many, he managed the task with the natural good humour and kindliness which had characterised all his contacts with visiting members, though failing down a little in a reference to criticisms of some recent architecture in Norwich and Norfolk made by the technical Press. Mr. Boardman, one felt, was full entitled to parry criticism but not to construe it as rudeness. The technical Press has a duty to declare itself on the subject of architecture; if it performs that duty badly or unfairly it can be called to task. But no one should consider that the Press should be muzzled because its representatives are attending a Conference in the role of guests. But this is a point hardly worth labouring, and the dinner ended on the highest possible note with the memorable speech by the Bishop.

Next morning a party went round the City Hall under the guidance of Mr. C. J. Tomkins, Deputy City Architect, who, as Secretary to the Association, has done a mountain of work in organising the events and in making members feel at home. Quite a number of visitors stayed over the week-end in the Norwich area, but others with work to do (and that included your correspondent) made tracks for home. They took with them memories of a splendid Conference and spared a thought not only for the work done by the Norwich committees but for the back-room boys (and girls) of the headquarters staff who worked while others played. Of the combined operation Norwich and London committees and staff may well be as proud as members are grateful.

∴ Report of the papers, discussion and banquet begins on page 691.

The Tours

Friday is the day for tours. In the morning some had gone to Holkham Hall, others to Castle Acre, but the majority (and who shall blame them ?) spent the day on the Broads, looking lovely in the June sunshine. The more conscientious (among whom your Correspondent must be numbered) had a choice of half-day tours to Blickling, to Cawston and Salle, and to the Broads. These were found most enjoyable. A few others accepted Mrs. F. E. Boardman's kind invitation to visit How Hill, Ludham. The show of azaleas and rhododendrons in the shrub garden is almost unbelievable, and the party which made the trip found How Hill a veritable oasis of rest in the bustle of Conference affairs.

At the Garden Party : Mr. and Mrs. Cecil Howitt (left) ; Mr. Robert O. Foster ; and Mrs. Foster and Mr. E. D. Jefferiss Mathews.

SOUTH PIER PAVILION, LOWESTOFT

for Lowestoft Borough Council

View from esplanade.

ERIC H. SKIPPER, FRIBA (Skipper & Partners), Architect to the Council for the Pier

R. B. CORLESS, DipArch(Birm.), ARIBA, Partner-in-charge

R. THOMPSON, ARIBA, Assistant-in-Charge

R. G. CARTER, LTD., Builders

OPENED by the Duke of Edinburgh on May 2, the pavilion takes the place of a smaller building which had to be demolished due to enemy action. The requirements of the Lowestoft Borough Council were to provide an " all-purpose " hall with stage, lounge, restaurant, foyer entrance, cloakrooms, lock-up shop, bar, café, and ancillary accommodation.

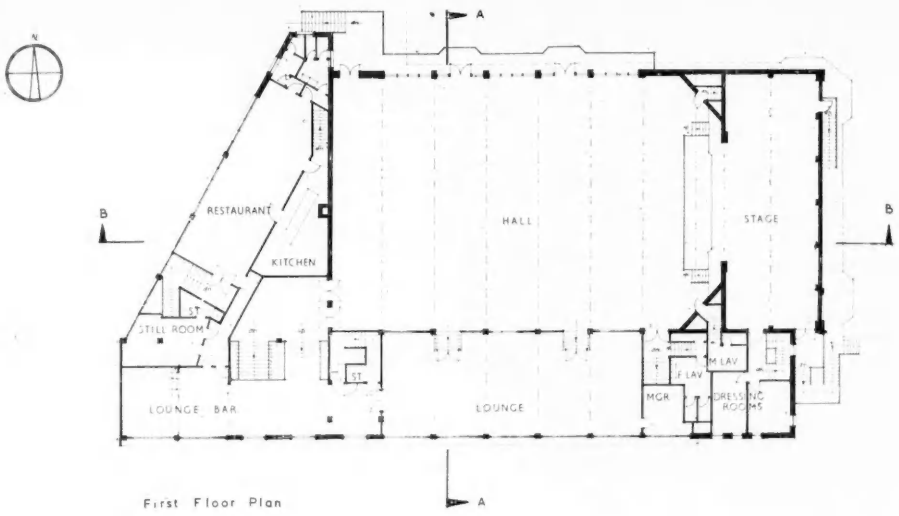
Plan : Due to limited space and site conditions, it has been necessary to have different floor levels, but in all cases access is from the pier deck level. The main pier is constructed around an earlier structure and is now solid with a concrete deck supported on reinforced concrete walls and retaining walls on each side. The site of the old pavilion was on a concrete deck 3 ft. 3 in. above this level supported on piers and brick arches. The remainder of the site encloses part of a reinforced concrete piled breakwater spur protecting the Yacht Basin.

Construction : Usual methods of foundation construction were not possible, as it was essential that the position of load-bearing structural members should coincide both with pile positions and with locations of greater strength in the brick constructed portion and the main decking. This was done by the use of a structural steel " box " which not only effectively spread the loading over the required points but firmly anchored the whole building.

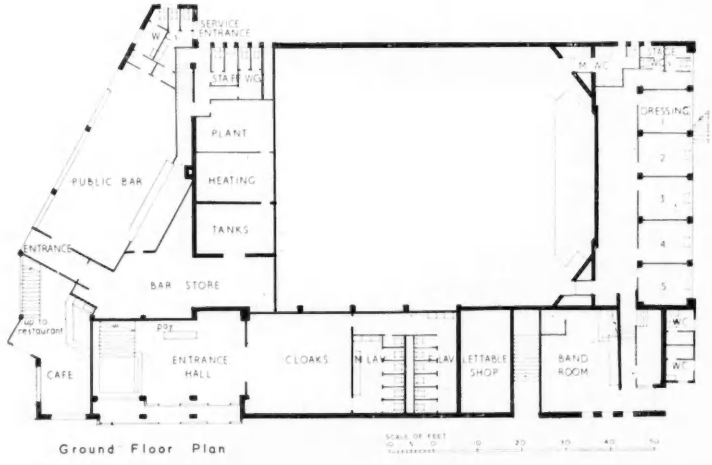
The exposed position of the building and the need to reduce loading on the sub-structure to a minimum dictated the use of light-weight materials, as far as practicable, which would withstand extreme climatic conditions without excessive maintenance.

Equipment : The hall is designed to seat over 700 persons. The stage is fully equipped and is fitted with a sound amplification system. The lounge can be subdivided into three committee rooms and can also be used in conjunction with the hall. There is a glazed tower 60 ft. high with an observation platform at the top, which recently was used by the BBC Television Service in the production of the " Saturday Night Out " programme from Lowestoft.

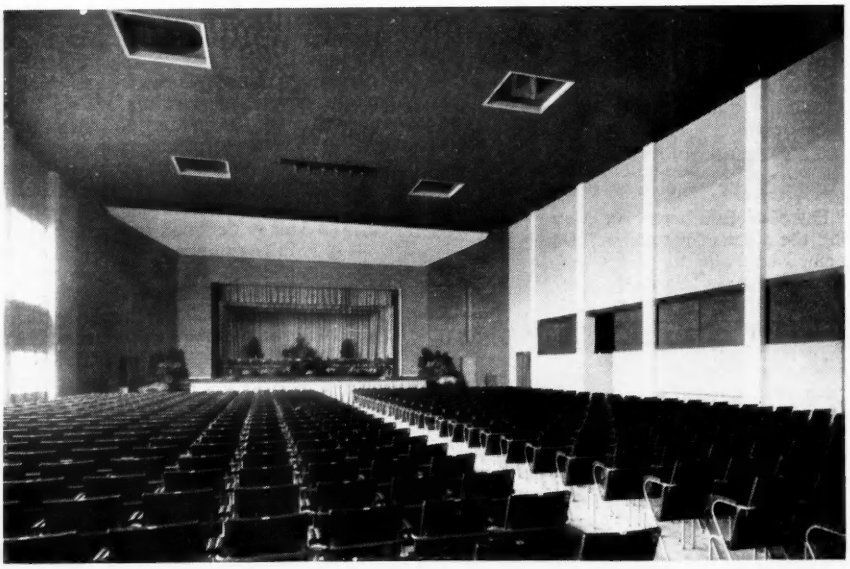
Services: The main portion of the building is heated by an oil-fired low-pressure hot-water system incorporating forced air heaters and mechanical air extractors. The main hall is lit by six ceiling windows each 4 ft. 6 in. in diameter, above each of which is suspended a group of three stage floodlights. These are connected to the main stage switchboard and can be dimmed as required. They are also fitted with colour filters for use during dancing.



First Floor Plan

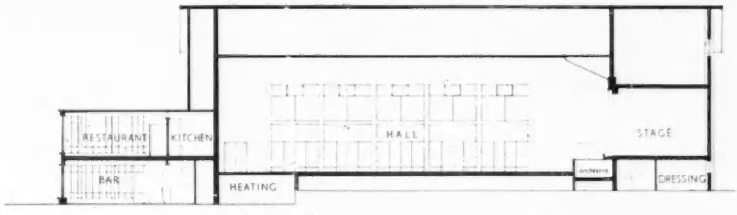


Ground Floor Plan



The hall, looking to stage.

The entrance hall.



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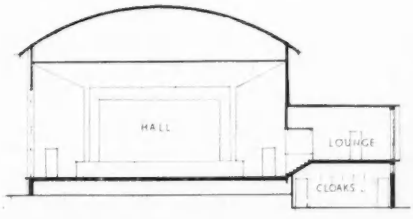
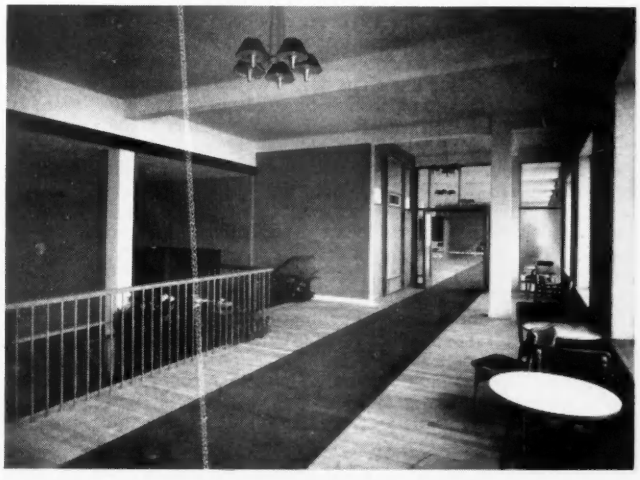


Section A-A



View from lounge bar on first floor looking towards the lounge.

Sub-contractors and suppliers :

Steelwork, Dawnays, Ltd., Norwich ; heating, A. Pank and Son, Norwich ; electrical installation, Frank N. Gort and Sons, Lowestoft ; gas installation, Eastern Gas Board ; plumbing, W. J. and F. Taylor, Ltd., Norwich ; facing bricks, Builders Direct Supply Co., Norwich ; main roof and wall cladding, Turners Asbestos Co., Ltd., per Dawber and Townsley, Great Yarmouth ; flat roof finish, Standard Flat Roofing Co. ; frost-proof tiles, S.G.B. Dudley, per Precasters, Ltd., Gorleston ; acoustic tiling, Gyproc, Ltd. ; ceiling tiles, Perfonit, Ltd. ; Tyrolean finish, Cement Marketing Co. ; glazing, J. Dyson, Ltd., Great Yarmouth ; floor tiles, Gibbons Hinton ; cork flooring, Armstrong Cork Co., per Holmes (Norwich).

Hardwoods, Wm. Mallinson and Son, Ltd. ; stage curtains, Garrick Curtains ; stage lighting, Strand Electric and Engineering Co. ; safety curtain, counter-weighting frame, stage equipment, Hall Stage Equipment, Ltd.; heater units, F. H. Biddle, Ltd. ; extractor fans, Keith Blackman and Co.; boiler, radiators, Crane, Ltd. ; amplification system, Pamphonic installation by Morlings, Ltd., Lowestoft ; sanitary ware, R. J. Pryce and Co. ; window gear, Wm. Newson and Sons, Ltd., Birmingham, per R. J. Pryce and Co. ; kitchen equipment, Crittall-Froy, Ltd. ; fire fighting equipment, Pyrene Co., Ltd. ; lightning conductor, W. J. Furse, Ltd. ; lantern lights—kitchen, J. A. King and Co.; hand-powered lift, G. Brady and Co., Ltd., Manchester ; door furniture, Parker, Winder and Achurch ; paints and decoration, Goodlass Wall and Co. ; wallpaper, John Line and Sons, Ltd.

SOUTH PIER PAVILION, LOWESTOFT

"The Dial," Dereham-road, Norwich

BERRY, CRANE & NOBLE, FF.RIBA, Architects

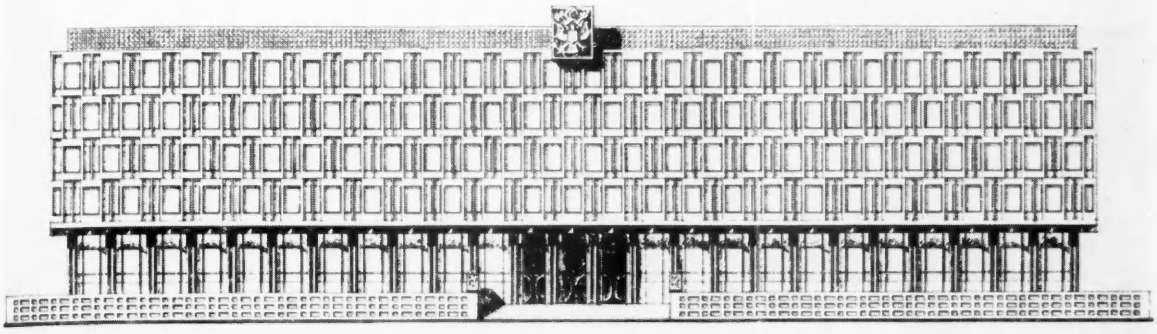
R. G. CARTER, LTD., Builders

THE house which stood on this site was demolished during an air raid in 1942. It has been re-sited to improve the corner of Dereham-road and Old Palace-road, and a large car park was obtained by setting the house back from the building line. The design of the illuminated sign is based on the old pillar dials of Jacobean times.

The building is faced with Ibstock bricks, mainly buffs, but with straw colour bricks in panels and plum colour to plinth and door surrounds. The roof is covered with brown sand-faced "Lincoln" pantiles, whilst a bronze sundial forms a sign over the bar entrance. Special attention has been given to colour schemes for the public rooms. The bar has lemon walls and green upholstery, and has a green linoleum dart board panel which is divided into sections so that damaged portions may be renewed. The wall behind the counter is in cerise colour, relieved by a service fitting supported on brass rods. The counter is of polished oak and the hand-blocked linen curtains are in matching colours. The smoke room also has a light oak counter and the walls are biscuit and mushroom with an apple green ceiling. The counter and chimney breast in the lounge are mahogany. The walls are mushroom and the ceiling powder blue. The curtains are red and upholstery grey. All floors are of Afzelia blocks which polish a rich mahogany colour. Lavatories are provided for both sexes off the public rooms and there is also a men's lavatory entered off the car park. From Old Palace-road, double gates give to a delivery yard and to a private entrance to the tenants' flat.

Sub-contractors and nominated suppliers were:

Ibstock Bricks: The Builders' Direct Supply Co., Ltd.; wiring, Palmers Electrical, Ltd.; electrical fittings, Courtney Pope (Electrical), Ltd.; ironmongery (locks, etc.), Wing and Webb, Ltd.; paint, Joseph Freeman, Sons and Co., Ltd.; wood flooring, Viger Brothers, Ltd.; Marley tile flooring, A. Burrell and Son; furniture, Attoe and Sons, Ltd.; seating and curtains, Trevor Page and Co., Ltd.; door mats, the Blind Institution; lantern lights, Mellowes and Co., Ltd.; roofing tiles, The Ibstock Brick and Tile Co., Ltd.; metal windows, Robt. R. Ruymp and Son, Ltd.; bitumen roofing, Bond and Lacey, Ltd.; steelwork, Dawnays, Ltd.; Bison beam floors, Concrete, Ltd.; stone copings, A. J. Woods and Sons; sundial, The Morris Singer Co., Ltd.; heating, W. J. and F. Taylor, Ltd.; plumbing, W. J. and F. Taylor, Ltd.; beer engines, etc., Vanstones; sanitary fittings, Stitsons Sanitary Fittings, Ltd.; and forecourt, Heyhoe Bros.



East elevation to Grosvenor-square of new design.

US EMBASSY CHANCERY, GROSVENOR SQUARE

Revised Design by Mr. Saarinen

NEW drawings and a sketch model of the US Embassy Chancery which will occupy the entire west side of Grosvenor-square, have been brought to London by the architect and presented to the American Ambassador, Mr. Winthrop Aldrich, the London County Council and the Estate of the Duke of Westminster. MR. EERO SAARINEN, the American architect who won the State Department's competition for the new Chancery building, explained to the Press in London on Tuesday that the special problem was to provide a dignified building which would be wholly modern in style yet be "a good neighbour" to the older buildings of Grosvenor-square. Like them, it will be six storeys in height.

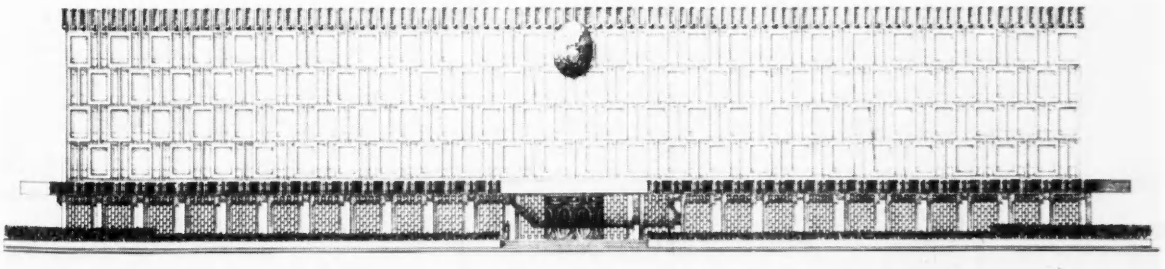
Thus the 310 ft. long building will have a Portland stone facing, since this is the material which makes the embellishments on the surrounding red-brick edifices.

The four upper storeys, which contain efficient office space, are marked on the façade by a structural grille, whose pattern blends in scale with the neighbouring neo-Georgian elevations. This grille consists of a clearly expressed system of staggered, precast concrete box-frames reaching from floor level to floor level, supporting each other like a house of cards. The precast concrete floor system is hooked into these.

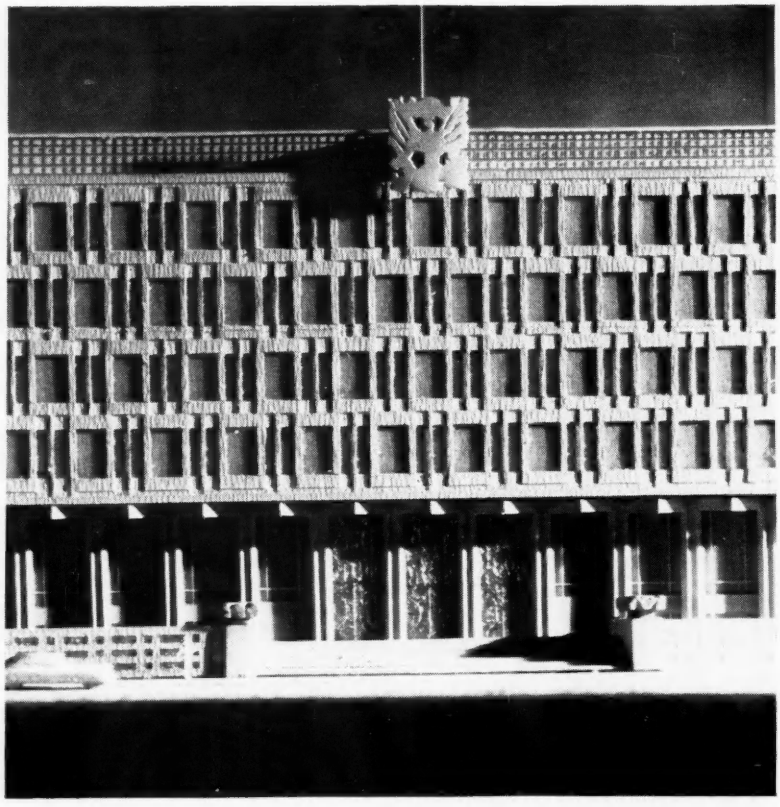
These office floors rest on a monumental 26 ft. high, 5 ft. recessed base, containing the lower and upper ground floors of the public spaces. This area is expressed on the façade by columns spaced at an 11 ft. 6 in. rhythm. These columns support a diagonal grillage of beams. The diagonal beams, meeting at a 5 ft. projection, make a structural frieze. The building is surrounded by a 7 ft. 6 in. high Portland stone wall, also marked with an open-grille pattern. The central entrance, containing the three main double doors, is of 23 ft. high bronze relief panels.

The building is crowned by a Portland stone parapet wall, patterned for light and shadow effects. The Great Seal of the United States, carved in Portland stone, is centrally set in front of this parapet. The general mass is a six-storey U-shaped plan, with a connecting link across the back on the lower and upper ground floor levels. (See next page.)

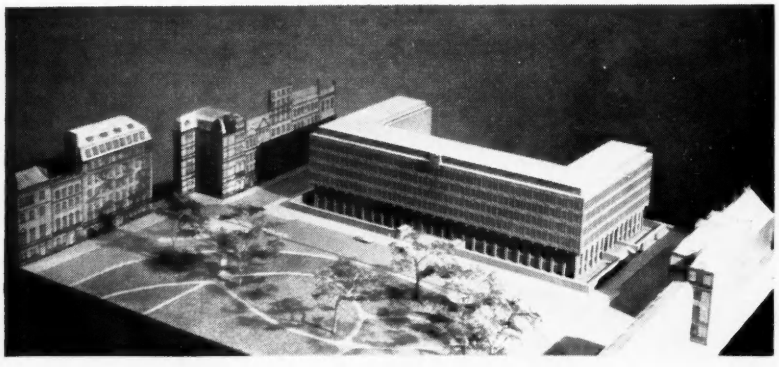
Mr. Saarinen and his partner, Mr. Joseph N. Lacey, have been setting up their team of English associate architects and consultant engineers. Construction is to start next spring. It has not yet been decided whether British firms will do the building or whether contracts will be open to international competition.



East elevation of competition design, now revised as above.



US EMBASSY CHANCERY. Detail of fenestration treatment to Grosvenor-square. Below : The model from north-east.



News of the Week

School Building Costs

OFFICIALS of Birmingham Education Department and the City Architect's staff on May 28 studied designs of new schools for Birmingham to see if their cost could be cut without leading to poor quality accommodation. If they cannot, representations may be made to the Minister of Education. The Minister has insisted that money allowed to build a school shall be the same this year as last year. But, with rising costs, this means economies must be made in the construction of school buildings. A report of the official efforts will be considered on June 11 by the Corporation's sites and buildings sub-committee.

Birmingham Vacant Post

APPLICATIONS are invited for the appointment of principal architect to take control of the housing design section in the City of Birmingham Architect's Department, which is responsible for a large housing programme for suburban and central redevelopment areas, including multi-storey flats in both traditional and new traditional construction, garages and large shopping centres. The salary will be in the range of £1,515 to £1,735 a year. Details are advertised in this issue.

RICS Elections

THE following have been elected officers of the Royal Institution of Chartered Surveyors for the session 1956-1957: President, Mr. Walter E. A. Bull, of the City of London (announced in our last issue); Senior Vice-President, Mr. W. M. Balch, of Chelmsford; Vice-Presidents, Mr. J. D. Trustram Eve, of Westminster; Mr. F. G. Fleury, OBE, of Plymouth; and Mr. J. L. Postlethwaite, of Liverpool.

Italian Architecture

"ORGANIC AND RATIONAL" is the title of the next talk in the Third Programme's "Prospect" series, on Monday, June 11, at 7.35 p.m., in which Joseph Rykwert will speak on some aspects of Italian architecture since the war, suggested by the recent publication of "Italian Architecture To-day," by Carlo Pagani. The talk will be repeated on Wednesday, June 20, at 11 p.m.

Syllabus of Examinations

THE Faculty of Architects and Surveyors has published the new syllabus of examinations for building and quantity surveyors which is obtainable, price 2s. 6d., from the Secretary of the Faculty at 68, Gloucester-place, W1. The next examinations are scheduled for May 27 to 31, 1957.

LMBA Brains Trust

THE annual "brains trust" which is a feature of the programme of Central Area No. 1 of the LMBA, will be held on Wednesday next, June 13, at Derry and Toms Restaurant, Kensington. The team will be Mr. F. T. Smith, LRIBA; Mr. R. Gleed, FRICS; and Mr. W. K. Laing, MICE. Mr. Ian Leslie, Editor of *The Builder*, will act as question master.

Appointment Open

BUCKS CC invite applications by June 30 for the post of Deputy County Architect. Salary £1,790 rising to £2,065 per annum. Details advertised elsewhere in this issue.

Professional Announcement

WILLIAM J. MARTIN, FIAS, FIQS, FIArb, and JOHN T. MARTIN, FIAS, FIQS, practising as Martin and Martin, quantity surveyors, at 5, Hyde-gdns., Eastbourne, announce that they have taken into partnership MR. JOHN HUGH MAYNARD, ARICS, who has been with the firm for more than six years as a senior member of the staff. The style of the firm remains unchanged.

FROM "THE BUILDER" OF 1856

Saturday, June 7, 1856

SECURITY OF LIFE.—By the continuation of stair cases right up to the roof and opening by means of a door at once upon it, a plan adopted by the late Mr. Cubitt in Belgravia, a great facility of egress is gained in event of fire. Ordinarily there is the treble difficulty of fixing and finding a ladder, opening a trapdoor with bolts, possibly stuck with paint or rusted with age, and then a dormer to be unfastened with the same difficulty with bolts, so that if to this be superadded the confusion and hurry incidental to a fire, it is almost equivalent to no egress at all.
—FIRE.

ARCHITECTURAL ECONOMICS

Papers and Discussion at the British Architects' Conference at Norwich

The British Architects' Conference opened at Norwich on May 30, and continued over until June 2. A "Conference Diary" begins on page 682, and there now follow full abstracts of the papers on "Architectural Economics" prepared for discussion by Mr. E. D. Jefferiss Mathews, Dr. J. C. Weston and Dr. J. L. Martin, together with a note of the principal points contributed by speakers from the floor of the hall. The Conference was opened by the President's Inaugural Address. At the end of the Discussion will be found the report of the Conference Dinner, held on the Friday night.

The President's Address

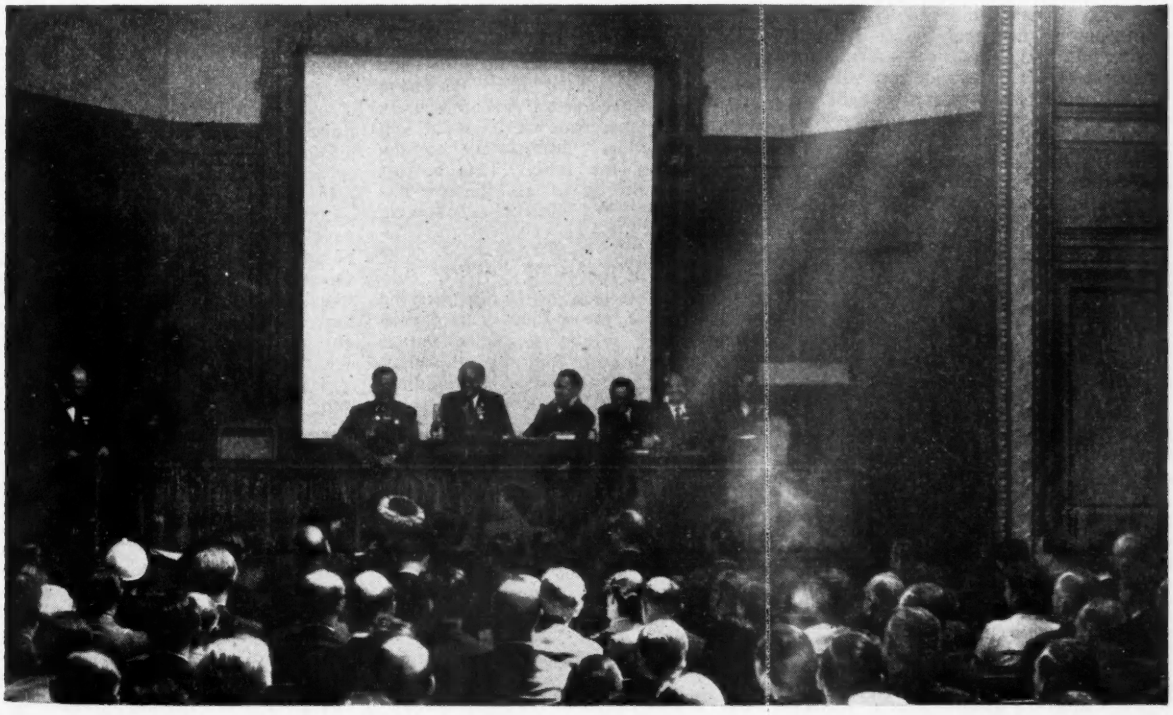
IN his inaugural address at the British Architects' Conference at Norwich on May 31, the president, MR. C. H. ASLIN, CBE, referred to the action taken in following up the findings of the two previous conferences, and gave an assurance that "anything tangible" arising from the present conference would also be followed up. Following is the text of his remarks:

The conference programme always dignifies these desultory remarks which are expected from the president at the inaugural meeting as an "address." I assure you it will be nothing of the sort. How delighted we all are to be back in Norwich after an absence of 26 years. No city could be more suitable for a conference of architects, as there is so much of interest to see both in the city itself and in the surrounding countryside. The only doubt we had when considering the kind invitation of the Norfolk and Norwich Association to have the conference in Norwich once again was whether there would be enough beds for all, having regard to the greatly increased number of members who attend our annual conference to-day as compared with 26 years ago. However, that problem has been solved, and it is not for me to discuss how; who will be sleeping with whom is a matter I am not going to inquire into!

We are extremely indebted to the Norfolk and Norwich Association for all the arrangements they have made. The secretary will know better than any of us from his experience over the years what a vast amount of work is entailed in making these preparations. I understand that the local committee which is responsible sits at regular intervals for nearly 12 months. I think our special thanks are due to Mr. Humphrey Boardman, the president of the Norfolk and Norwich Association, who has acted as chairman of the local executive committee, and also Mr. Tomkins, their hardworking honorary secretary.

On behalf of the members, I would say how very much we appreciate the hospitality which Lord Mayor and Corporation are offering to us in the shape of the civic reception which is being held

The President (Mr. C. H. Aslin, CBE) giving his inaugural address to the conference. To his right is Dr. J. C. Weston.



THE INAUGURAL SESSION.—The scene in the Stuart Hall at the opening session of the papers on "Architectural Economics." At the microphone is Mr. C. M. Nott, and those on the platform (left to right) are Mr. Humphrey Boardman, the President, Mr. C. D. Spragg, Mr. E. D. Jefferiss Mathews, Dr. J. L. Martin and Dr. J. C. Weston.

this evening at the castle; we are all looking forward to it very much.

We are also most grateful to the Lord Bishop for kindly allowing us to have our garden party this afternoon in the palace garden and also to the dean and chapter for so kindly combining evensong with a special service for the members of the conference. This is a feature which I should like to include in every year's conference, but it is not often that we have the privilege of meeting in a city which has such a lovely cathedral as Norwich.

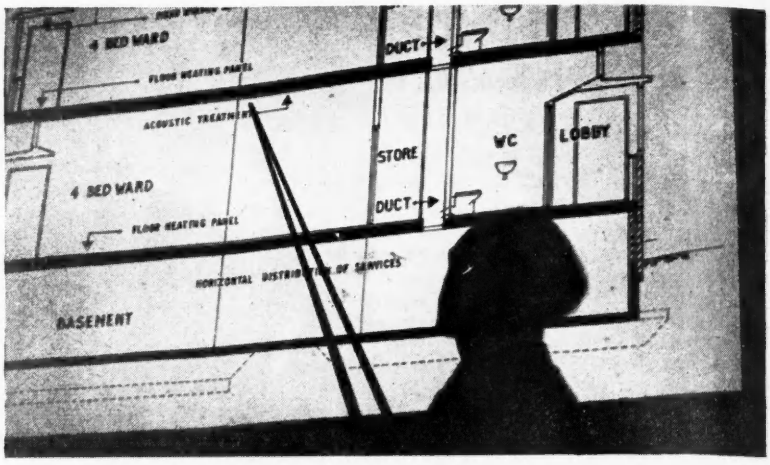
The serious business of the meeting is the presentation of the papers by three experts on "Architectural Economics," which those of you who have read the papers will agree is not nearly so dull as the title indicates. I have little doubt that there will be a very full discussion after the synopses of the papers have been presented by the three lecturers, but just in case there should be a complete silence we have, by arrangement with the speakers, prevailed upon two or three people with special knowledge of the subject to initiate the discussion. I cannot but think that once it is started it will run on for its full course until the completion of the meeting to-morrow.

Before I make way for the speakers I should perhaps say one word about the follow-up of the discussions which we have at these conferences. Arising out of the Torquay conference two years ago, when we had the masterly exposition on building materials and techniques by Messrs. Allen and Mills, liaison has been made, and will go on being made, with some of the manufacturers of building materials which I hope and am sure will produce useful results. Following on the very wide range of discussion last year arising out of the paper by Sir Thomas Bennett and Mr. Woodbine Parish, committees have been considering all the various points which were brought up both in the papers and in the discussion, and I understand that the council of the Royal Institute are being recommended by the executive committee to produce a report in the *Journal* saying how the various points have been dealt with and what action is being taken. Similarly, we shall make certain that anything tangible arising out of the papers and discussion this year is not lost sight of; it will be followed up.

I.—E. D. JEFFERISS MATHEWS

THE value of the architect to the community does not depend on his skill as a creative artist alone—it does not matter how good the building is in appearance, even in planning and function, if it is not right for the economic requirements of the client.

The purpose of these papers is to revive in our minds the great importance of ensuring that we give our clients "value for money"—a phrase which I use as a colloquialism for the more precise one of "economics"—and of studying how in many ways this approach to any design problem has a vital and essential effect upon all aspects of the design; in other words upon the "architecture." More and more as the economic structure of the nation—in fact of the world—becomes an essential element of existence and of direct effect upon every individual, as well as on the State, so must we as architects be more constantly aware of it and of our responsibility to our clients to ensure that it is sound. For this they will often need guidance. It is in my view no excuse to say that "the client didn't mind spending that money," or "that he wanted it cheap so that he had it that way." Our responsibility to our clients is to advise them of the most economical way to meet their particular case, just as it is obviously our responsibility to advise them on plan form and arrangement. We have an exciting challenge these days: to provide good architecture within the economic requirements of the period in which we build. Never should we say that we could not make a good job of the building because the "economics prevented it." We have seen that architecture and economics are inseparable; therefore we have the job of moulding our architecture to the economics of the time. This is just what the tradition of architecture has always been. We are only following tradition.



Dr. J. L. Martin seen in silhouette when speaking to his slides.

Some Governing Factors

Mr. Mathews went on to illustrate the wide scope of the subject under consideration by taking simple examples from the extremes of the range, the small house and a large industrial building, after which he continued:

"Outside" influences. I have said that to attempt to tabulate the economic aspects of building is difficult. Obviously that is so with the diversity of considerations and their ever constant implications at all stages and in all aspects of design. But appreciating that one is attempting the virtual impossibility within the limitations of this paper, and accepting the risk of oversimplification of a very extensive subject, some factual tabulation is perhaps justified as a guide and reminder to our approach to any design problem.

To a large extent, although not entirely, the economics of architecture appear as the effect of the difference between the way in which any given capital sum is spent for a given accommodation requirement. It is a fair generalisation that at least 75 per cent. of capital cost goes to the provision of the basic accommodation requirement— namely the cubic content, the floor area, the number of pupils in schools or the number of beds in hospitals, whichever is the unit for the basic assessment of the accommodation—irrespective of the manner in which that space is enclosed, assuming any reasonable standard of building. The major consideration therefore must be the determination of the accommodation required within the capital limit or —in these days—the less common opposite approach of determining the capital requirement for a given and fixed accommodation requirement.

But it is seldom right to accept this as a rigid element. As all the other aspects are studied, it is frequently apparent to a client that the economics may dictate a variation in the accommodation requirement—or a variation in the capital allotment. So although it is necessary to establish some yardstick of measurement, and that is best achieved from the accommodation requirement, it often develops that the yardstick itself must be adjusted up or down to balance other aspects of capital expenditure. At all stages therefore we have constantly to look back, so to speak, at the basic requirement to see that it is not leading to an uneconomic expenditure.

Bearing this fundamental point in mind we can begin to consider the many other aspects, most of them common to the great majority of projects in one form or another and to a greater or lesser extent. Always important is the balance between capital cost and running costs, using both in their widest sense, as Dr. Weston's factual tables will show. On the larger buildings this decision can have a big effect on the way capital is to be spent, and so on the nature and form of the overall design. Inseparably related, we have to incorporate at every stage and in all aspects of the studies the national economic circumstances at the time we are building and their trend, and the conditions ruling in the building industry; which latter are of course largely the result of the

former. Overall we have to relate the scientific development of building materials and structural techniques, as Dr. Martin's studies will indicate.

"Inside" influences. The "inside" influences—the client's requirements and his own economics—are even more diverse and therefore more difficult to tabulate with any degree of accuracy. Obviously they must vary considerably according to project and client. But again risking over-simplification and perhaps to some extent disregarding the building which has factors differing so considerably from other types of building, we can tabulate under this heading the studies which must be made of the effect of such factors as the need for and extent of flexibility, thermal insulation, the staffing of a building, the nature of the capital to be used and the investment aspect of that capital, and the effect of taxation, rating, fire insurances and the statutory requirements.

If we take just one or two of these aspects and briefly consider their implications, it becomes immediately obvious how they can have a major effect on design arising from the decision, based wholly on economics, whether for example the building is or is not to be designed for flexibility for subsequent alterations.

Combining and Balancing Factors

Our object must be to equate these often conflicting factors to achieve the right economic solution, and from this to permit the right architecture to emerge. I find in practice that generally the development of this equation works out in this way. Accepting, as I have said, that it is necessary to assume as a basic yardstick a given accommodation requirement, we find, if we take the client's requirements "blind" and relate to them the dangerous preconception of what we think the building should be without regard to any study of economic factors, that we get a steeply rising capital cost curve on the graph.

Whether this would produce good architecture or not is of course dependent on how we interpret what is "good architecture"! From the whole basis of the argument I am putting forward in this paper, I am quite sure in my own mind that the result might be "architecture" but it would not be "good architecture" in the sense that architecture is dependent on economics, as the result would almost certainly not be economical. To me therefore the result would fail as a piece of architecture, just as a painting would fail from the introduction of an element of purely bad aesthetics.

A Low Level Line

Conversely, if we arrive at a solution based again on our client's requirements accepted "blind," but developed along cheap, shoddy, niggling and petty lines in an attempt to establish ill-gained popularity on the grounds that architects are not "extravagant," we should find the capital cost curve as a low level line, perhaps even falling away from the initial starting point based on the accommodation requirement. What this extreme alternative would produce in the way of "architecture" I should not like to hazard a guess, but unfortunately (and here lies the common tragedy we see so much of to-day) it might—in fact it so often does—produce temporary popularity and lead the architect to another job.

But there lies the moral. I have said only "another job," not "other jobs," a great difference, not only to us personally but to the whole position of architects in the contemporary social structure. This kind of "cheap" solution, regardless of economic factors, cannot possibly survive the test of even a short time. Unfortunately it is as common to-day as the costly solution, equally regardless of economic factors. Both are wrong and when seen show only that architects have failed in their responsibility to the building public. Even more, their own failure has led sections of the public to believe that as a profession we are unable to take our correct place in the social structure.

Usually I find it comes about that the right answer, arrived at only after the most careful study survey of the many economic factors which I have indicated briefly, lies in a capital cost line on the graph which roughly bisects the two extreme lines I have described. But I must say at once that this is a dangerous generalisation. It is probably correct in the majority of cases, but there are sufficient exceptions to establish the overall point that every case with which we deal must be taken on its own merits and surveyed accordingly without any pre-conceived conception of what the result will be—in other words without influencing the result by what we think we should like to build.

I am glad that this is so because, in spite of the apparent unification of the architectural solution dictated by the common national—or even the global—economic conditions of our day, there remains always that degree of individualism which is essential, as it has always been, to our art and science. In other words, we do not know how the solution is going to appear as a piece of architecture until we have solved it as an individual case. From this must spring a virile and lively architecture, correct economically, good aesthetically. Most certainly it can and should be comparable with the best that has been done before: done perhaps in very different economic circumstances but none the less circumstances which dictated the architecture—not architecture forcing itself regardless upon the economic structure.

St. Peter Mancroft, Norwich.

II.—DR. J. C. WESTON, PhD

ARCHITECTURAL economy implies the joint consideration of money spent and, in the broadest sense, the value obtained, both functionally and aesthetically. The decision between alternatives should combine cost, function, appearance and quality; the relative importance to be given to each depending on the class of building and the requirements of the client. There is no reason to suppose that the constraints now imposed on the architect should in any way prevent his achieving buildings which are satisfying in every way. Indeed, your President, Mr. C. H. Aslin, has said that nowadays the perfect architectural conception is produced by "a patron with exacting demands, an irritating site and an acute shortage of money." It is within this realistic concept that I propose to consider the question of Architectural Economics, which I regard as the study of ways of providing and applying economic data to the design of buildings, which are acceptable functionally and in quality, in such a way as to minimise capital and running costs.

Cost Control

The form in which the client presents to the architect the economic framework within which he wishes to work depends on the type of building involved. For an individual house the requirement may be in the form that, for example, "the

cost should not exceed £4,000." For local authority housing on the other hand the requirement usually sets a limit to the cost per sq. ft. of floor area, while for schools the cost is controlled in terms of expenditure per pupil. These are merely alternative ways of setting some economic restraint on the design from the client's point of view, while leaving the architect freedom within this limit to propose solutions.

Many architects are in a much better position to deal with the functional and planning requirements than with the economic needs. The result is that at a comparatively late stage of the design work it is found that the building is likely to be too expensive. The only course then possible is to omit various features or substitute inferior materials, usually in finishings and fittings ; often as a result the original architectural conception suffers and the client is left with an uneasy feeling that he has been provided with a " second best " solution.

If economics are to play their part throughout the design process and to become an integral and automatic part of design then it is essential that some more satisfactory method than the present technique—which at best is "experienced intuition"—should be devised and a proper form of cost planning developed.

Whether data for cost analysis should be accumulated by the architect or by the quantity surveyor on his behalf is a question which the Conference might discuss. Whatever method is adopted it is essential for the data to be available to the architect in a simple form from the initiation of the project.

The type of information which it is necessary to obtain by cost analysis for use subsequently for cost control purposes is illustrated by Table 1. As an example, the breakdown of prices of a number of blocks of flats is taken ; the functional components used being those which can be reasonably easily obtained from priced bills. It is questionable whether data from the bills, which is the price to be paid, including profit, rather than the actual cost of carrying out the work, should be used for this purpose. While the use of the actual cost is preferable it is only rarely that such data will be available, although more might be done by architects collecting data themselves through their clerks of works.

The form in which the information is set out in the analysis, that is, as the cost per sq. ft. or per ft. cube or per pupil, depends upon the type of building involved, and in a subject so much in its infancy it would be unwise to lay down hard and fast rules. It seems reasonable however to relate the figures to the method employed by the client in stating the cost requirements. Consequently, since the acceptable price of flats is usually expressed in terms of the nett floor area within the flat, this basis has been used in Table 1. The prices expressed in this way should be combined with a statement of area ratios of certain of the components: that is, in this case, the ratio of the areas of external walls or partitions to the nett floor area. The ratios relate to typical upper floors rather than to the building as a whole since the upper floors are generally more strictly comparable. In the example given, data are provided for each of three blocks. These show a range of cost for each component and in fixing the target for cost control in design, judgment must be exercised and the actual design of the examples borne in mind. Some allowance for contingencies is also desirable and the targets suggested in the last column would be reasonable in the example given.

It is difficult for an architect called upon to design a type of building for which he has not had some previous experience of costs, but even here the breakdown of the data into functional components is helpful since targets based on other types of building can be used for the individual components. The situation can arise in which it is only by the collection of data from a number of sources that an adequate basis for the targets can be obtained. Multi-storey flats, say over six storeys in height, provide such an example and because of this the Building Research Station has recently collected extensive data on the current prices of multi-storey work. From this study, C. N. Craig has been able to provide target prices for the main groups of components in blocks of flats in the region of six to twelve storeys in height. It is interesting to note that the comparison of prices in this way leads not only to the establishment of target figures but also, by making possible an economic comparison of designs from many different offices, suggests ways in which substantial reductions in cost should be possible.

TABLE 1.—COST ANALYSIS OF MULTI-STOREY FLATS

Prices per sq. ft. nett.

Component	Project A	Project B	Project C	Target for cost planning
	s. d.	s. d.	s. d.	s. d.
Substructure	3 3	3 6	6 3	3 6
Frame and walls, floors, stairs and roof structure	20 4	20 2	15 2	17 6
Partitions	0 8	1 0	1 0	1 0
Plumbing and heating	6 3	6 3	7 1	6 6
Joinery	4 3	4 4	4 5	4 3
Plasterwork	3 2	2 11	1 11	2 6
Floor finishes	2 2	2 11	2 0	2 0
Painting and glazing	2 5	1 9	2 3	2 0
Windows	1 8	1 6	1 2	1 3
Electrical	2 2	2 3	2 11	2 3
Steel and ironwork	2 4	2 0	1 4	1 6
Roof finishes	0 10	0 7	0 8	0 9
Lifts	4 2	2 10	2 10	3 0
Total	53 8	52 0	49 0	48 0
Storeys	8	9	10	
Nett area	35,000	37,000	22,000	
Gross area	47,000	46,000	28,000	
Area ratios of typical upper floor :				
Nett/Gross	0.81	0.85	0.84	0.84
External wall/Nett	1.12	1.11	1.14	1.12
Partitions/Nett	0.80	0.96	0.40	0.80

Planning Economy

The inclusion in the cost analysis of data relating to the area ratios of components provides another useful means of cost control. The examples in Table 1 show only a relatively small range but in the survey of the cost of high flats the ratio of nett to gross area for upper floors was from 0.71 to 0.91 while the ratio of external wall area to nett floor area ranged from 0.80 to 1.60. These two ratios are of particular importance. The first is in a sense a measure of planning efficiency while the second governs the heat loss of the building, and hence both the initial and running cost of the heating installation. The figures obtained in the survey of flat costs suggest that for typical upper floors the access area should not in fact exceed 15 or 16 per cent. With a cost per sq. ft. gross of around 50s. to 60s. the addition of an unnecessary 10 per cent. to the gross area would obviously have a very marked effect on the overall cost.

The wide range of area ratios referred to above suggests that much more use should be made in design of such ratios and target figures established on the basis of well-planned examples of other buildings of the same type. A notable example of this having been done is provided by the work of the Ministry of Education development group on school design. Their success in stabilising prices of schools in terms of the cost per place has largely derived from the increasing efficiency of planning resulting from a reduction of excessive circulation and access areas. A similar result has been achieved by the LCC and is dealt with in Dr. Martin's paper.

Construction Economy

The main application of cost control is to the choice between alternative forms of construction. The publication of prices for alternative forms of construction presents problems, since they can only conveniently relate to average conditions and actual tenders may differ widely from them. However, the relative costs of different constructions should change less rapidly with time than the absolute values. The Building Research Station therefore recently published data on the average prices of a wide range of different forms of construction for walls,

floors and roofs together with the amount of thermal insulation which was provided. At the same time the man-hours for the operations involved and the basic material costs are given, so that some adjustment is possible as the costs of either change. The important feature of this publication is that it gives, for the first time, not only the functional properties — insulation, fire resistance, density, etc., of the various forms of construction—but also their costs. By its use the likely cost of a construction to provide the specified degree of insulation can easily be found, or alternatively the best insulation for a given cost can be selected.

In seeking ways of reducing costs without loss of quality, much more attention could be paid to the methods which are to be employed in actual construction. The designer is often content to leave the matter entirely to the contractor, and while the latter will undoubtedly overcome the problems imposed by the design, this is often only possible by increasing the cost. The type of plant which may be available should properly be considered at the design stage ; the increasing use of tower cranes opens up possibilities for handling larger units than could hitherto be economically contemplated. With present contractual arrangements however this may be difficult to achieve except in a general way.

Another example of the same type is provided by the design of shuttering for concrete. The importance of this subject can be realised from the fact that the cost of the concrete in a wall is often less per sq. yd. than the cost of the shuttering that encloses it until it sets. It is suggested that at least the larger design offices might well consider whether shuttering design should not properly fall within the field of the architect or his engineering consultant. In any case, greater attention to design detail to allow repeated use of simple forms of shuttering could lead to definite reductions in cost.

During a period of developing building techniques it is clear that means must be found to ensure that the production methods to be employed are fully considered during design. Whether this is best achieved by greater attention in architectural training to production methods, or by the nomination of contractors at an early stage, or by the development of firms providing for both design and construction, is an important question for architects to consider.

Running Costs

So far I have concentrated attention on first costs, but it is just as important at the design stage to consider the ultimate costs of running the building ; that is the costs of heating, lighting, administration and maintenance.

The first requirement to enable capital and running costs to be considered together is to establish an exchange rate between annual expenditure and first costs. The equivalent capital value of, say, £1 per annum of running costs depends on the rate at which money can be borrowed and the period over which the loan is to be repaid. Table 2 shows the equivalent capital value of £1 per annum at different rates of interest and for various periods. The meaning of these figures is that, for example, a payment of £1 per annum will pay the interest on a loan of £12 at 5½ per cent. and repay the loan within a period of 20 years ; it is in fact the rate of exchange between current and capital expenditure. It is clear that the figures do not differ very greatly with the period taken for the loan. These rates of exchange make no allowance for any inflation during the period, which would in fact increase the running costs. To take some account of this possibility, there is much to be said for ignoring the actual term of the loan and taking the figures for an infinitely long loan (nominally 999 years). This has a further advantage that it is no longer necessary to have available tables of the equivalent value of £1 per annum, since for a long-term loan the equivalent value is the sum which will yield £1 per annum at simple interest without repayment of the capital. For example, at 4 per cent. the capital value of £1 per annum is £25, at 5 per cent. £20 and so on.

TABLE 2.—EQUIVALENT CAPITAL VALUE OF AN ANNUAL EXPENDITURE OF £1 PER ANNUM

Period	Rate of Interest		
	5 per cent	5½ per cent.	6 per cent.
15 years	10.4	10.0	9.6
20 years	12.5	12.0	11.5
40 years	17.2	16.0	15.0
60 years	18.9	17.4	16.2
999 years	20.0	18.2	16.7

For a loan at the rate of 5½ per cent., which is a typical figure, the capital value of the running cost of £1 per annum is therefore about £18. In other words, an added capital expenditure of £18,000 would be justifiable if the running cost could be reduced by £1,000 a year. It is useful to consider the application of such a figure in a few typical cases. The obvious example is the effect of planning on the administrative labour costs. To take such an example ; a revision of the designs of a laboratory block enabled the number of laboratory stewards required to be reduced by one. The cost of a laboratory steward was about £800 a year so that an added cost of £800 x 18, or £14,000, would have been justifiable in order to make this change possible. This is a very considerable sum and would obviously justify quite substantial changes. In the event the revised design did not involve any marked increase in cost but the example clearly emphasises the importance of considering the functions of the building, and particularly the staff involved in running it, at the design stage. In general it is likely that the saving of one man's time would justify an added first cost of at least £10,000.

Similar considerations apply of course to other annual expenditure, of which heating is the obvious example. The balance to be struck is between the added cost of better insulation and the reduction it may mean in first cost of the heating installation and in running costs.

The exchange rates given in Table 2 are applicable when the running costs are more or less constant from year to year, which is the case for heating, lighting and labour costs. There is, however, a tendency for maintenance costs to increase with the age of the building and in this circumstance the exchange rates given would not be applicable ; the general effect of an increasing expenditure with time being to reduce the corresponding capital value as compared with expenditure of the same total amount by equal sums each year. The extent of this reduction depends on the way in which the expenditure increases with time, and on various plausible assumptions the reduction might be from £18 to £10 or £11 in the case of a loan of 5½ per cent.

An examination of the maintenance costs of local authority housing has shown that the total expenditure over the life of the house is equivalent to about £245 or only about 18 per cent. of the first cost. A further breakdown of this figure into the maintenance costs of specific items is given in Table 3, from which it is clear that only in the case of " water service " and " external painting " is the maintenance cost a substantial percentage of the first cost. The maintenance expenditure on water service is in fact made up of a number of small elements such as overflows, ball valves, etc., which are trivial in work content but whose frequency of occurrence is high.

The results of Table 3 suggest that rational design could achieve a better correspondence between initial and maintenance costs among the various components, and the use of somewhat more expensive items which reduce the cost of external painting is clearly justifiable.

TABLE 3.—MAINTENANCE COSTS OF LOCAL AUTHORITY HOUSING

Item	Maintenance cost as percentage of annual maintenance costs	Maintenance cost as percentage of initial cost
External painting	32	100
Water service	17	84
Heating, cooking, lighting	14	33
Internal structure and finishes	14	7
Main structure	10	5
External services and site works	8	20
Sanitary fittings	5	22
Total	100	

Conclusions

I have no doubt that the majority of architects are fully aware of the problem of striking a proper balance between function, appearance and cost; their main problem is the need for a rational way of approaching economic questions and for the data to form a basis for decisions on these questions. I have made various suggestions of ways in which a closer use of economic data can be made in design, and I hope the Conference will consider and develop these and other methods by which better and cheaper buildings can be produced and clients given, in the broadest sense, full "value for money."

This paper is based on studies being made as part of the programme of the Building Research Board and appears by permission of the Director of Building Research.

III.—DR. J. L. MARTIN, MA, PhD, FRIBA

THE great bulk of building on which architects are used is being carried out within severe cost limits. The complexity of requirements of each building type has increased in an alarming fashion so that it becomes more and more difficult for any individual (including the architect) to state these requirements in terms which are precise enough to lead to general economies. Behind all this there is a background of constantly rising costs, of materials and labour. The traditional materials themselves are being replaced or supplemented by an ever-increasing range of alternatives that must be assessed against each other from the point of view of cost as well as performance.

I add to these complications one additional factor. It seems to me that, as the whole process of building has become more complicated, the degree of specialisation and isolation amongst those who produce buildings—architects, quantity surveyors, builders—has increased. We no longer work with a common understanding. The pressing need from the point of view of the economics of building is for a new understanding and a new integration.

There are fortunately some signs from every side of the industry that this process is beginning. But the architect occupies a key position. He can accelerate the process and his readiness to do so will depend on his appreciation of the part which the economics of architecture can play. I propose to outline certain developments in architectural practice which seem to be significant.

The Study of Functions

I place the study of the functions of buildings before any other aspects of building economy, partly because it obviously precedes the normal planning and building processes, but mainly because it is a development initiated particularly by architects. Outstanding work of this kind has been carried out by the Ministry of Education investigations into school planning and by the Nuffield Provincial Hospitals Trust investigation of hospital and laboratory design.

I have not the slightest doubt about the advantage of this method of investigation from the point of view of the profession. It has already been proved that this preliminary investigation and rapid dissemination of information can work admirably in practice and it is at this point that the influence of the study of the functions of buildings on architectural economics can best be demonstrated. In the case of primary school building, my own department, working with a knowledge of investigations carried out by the architects at the Ministry of Education and supporting this by their own studies, made between 1949 and 1954 the significant reductions of area and cost per pupil shown in Table A.

TABLE A

Year	Number of Schools	Average area per pupil, sq. ft.	Average cost per pupil (based on tenders)
1949 ...	6	74.1	£215
1950 ...	7	62.1	£173
1950 ...	4	51.5	£151
1951–52 ...	6	43.9	£145
1952–53 ...	2	42.6	£138
1953–54 ...	4	41.5	£133

The reduction of cost in 1950 is largely the result of saving of floor space. It comes in particular from an all-out attack on circulation areas. From 1951 to 1952 the Ministry adopted a policy of combining hall and dining-room areas. But in succeeding years the total net costs are nevertheless held against a general increase in prices, which moved upwards from 1951 to 1954 by something like 15 per cent.

I wish to make one final point. It is not the purpose of research to produce complete answers—cut and dried type plans. What research can do is to illuminate some aspects of the problem and to provide the architect with data, information and methods of analysis which will enable his imagination to work on a better and fuller understanding of the various conflicting needs he has to meet.

The Control of Cost Elements

The aspect of cost control so far discussed can, I think, be claimed by architects as a contribution to building economy which they have been largely instrumental in securing. The cost control that I now wish to discuss is again a control which can be exercised by architects at the design stage, but which is based on material supplied, this time, by the help of the quantity surveyor.

The principle can be stated quite simply. It rests in the fact that the normal method of estimating costs *after* the drawings have been made frequently leads to waste. By this time much work has been put into drawings and specification. If the quantity surveyor's estimate exceeds the permissible figure a costly revision of drawings and specification may be necessary.

What the architect needs of course is a measure of cost — a cost instrument — which he can use with understanding and purpose as he designs. A cost per cu. ft. is an unreliable measure. A permissible cost per place (for educational building) is of some use. But it is still too crude a measure to establish a balanced expenditure in every component of the building. The objectives to be achieved have been clearly illustrated in the Ministry of Education Bulletin on Cost Control. They are:

(1) To reveal the distribution of costs in each component and element of the building, e.g. foundations, structural walls, partitions, roof, etc.

(2) To relate the cost of components to each other and to demonstrate their relative importance.

(3) To indicate where savings can most easily be made.

(4) To provide comparisons between alternatives.

The method of achieving this objective is by making a detailed analysis of the costs of completed buildings. But the breakdown of costs does not follow the usual quantity surveyor's method of subdivision into trades. The costs for this purpose are analysed into the components of building as the architect conceives them, for instance foundations, external walls, internal partitions, floors, roof, etc. The main interest of the architect in the initial stages is not which trades construct a floor, but how much it costs as a whole. These costs of components can of course be broken down still further into their constituent elements.

A chart showing such a breakdown of costs for flat building is shown in Table B. It will be seen that a percentage of the total value of the work has been placed against each element. From a glance at these percentages it is easy to see where the major savings are likely to be found. The cost of all these component parts can be compared with alternatives by examination of a number of buildings, and target costs can be worked out in terms of cost per sq. ft. for each component as shown by Dr. Weston (his Table 1). If a total cost limit is applied to the building, the proportion of cost that can be expended on the various elements and components is shown in Table B. If by the use of comparative costs, indicated by Dr. Weston's table, a saving in one part can be achieved, then that saving can be spread proportionately over the other parts or accepted as an absolute economy.

Comparative cost analyses can of course be misleading. A low cost in one component may be achieved only by an increased cost in another. For example, if money is spent on expensive formwork, the cost of concrete walls may be increased: but this in turn may allow the walls to be left unplastered and may consequently show a very low cost for finishings. It would be extremely misleading to add up the lowest costs for each part and to assume that a satisfactory flat could be built at these costs.

The critical factor in all this is the assessment of costs in terms of the composite parts out of which the architect designs his buildings. It is an expensive business to produce cost analyses of this kind from the normal bills of quantities. But it nevertheless seems essential that the architect should be given information in this new form if he is to use cost control effectively at the design stage. It is there-

TABLE B.—INDICATION OF PROPORTION OF COSTS IN AN 11-STOREY SLAB BLOCK CONTAINING 75 MAISONETTES WITH TRADITIONAL FIRES AND FLUES BASED ON COST ANALYSIS OF FOUR SUCH BLOCKS

Note: Known oddities in the tender analysis have been excluded.

Component	Element	Percentages	
		Component	Element
Substructure		11.18	
Structure		20.00	
Cladding		8.24	
Partitions		1.78	
Finishes	Roof	1.18	
	External	2.36	
	Internal	8.23	
Services	Gas installation		0.40
	Electrical installation		2.94
	Dry fire mains		0.24
	Lightning conductors		0.15
	Sanitary fittings		2.06
	Soil waste and vent pipes		1.18
	Rising mains, tanks and pumps		0.89
	Tank rooms		0.46
	Cold-water supply		0.40
	Hot-water supply		2.06
	Fires and flues		2.94
	Internal ducts		0.59
	Roof ducts		0.11
	Ventilation to bathrooms		0.89
	Drying cabinet and ventilation		2.94
		18.25	
Joinery	Doors		2.94
	Fittings		2.06
	Larder and fuel stores		1.47
	Internal staircase		1.44
		7.91	
Sundries		1.18	
		80.31	
Public staircase bay ...	Public staircase bay		3.74
	Lifts and enclosures		5.70
	Refuse chute and chamber		0.85
		10.29	
Balconies		9.40	
		100.00	

fore interesting to find a quantity surveyor, Mr. C. M. Nott, writing an authoritative article on cost analysis and cost planning (*RICS Journal*, May, 1955), and following this up by suggesting an unusual method of billing quantities by means of elements rather than trades. This new bill of quantities, the "elemental bill," provides a cost analysis ready to hand.

Some advantages of the bill are obvious. For site valuation, for example, the grouping of items allows whole sections of work to be dealt with on the simplest possible basis rather than by the difficult process of sorting out parts of trades. The architect's interim estimate of costs is easily built up. From the contractor's point of view there may be at first sight some disadvantages. It would be interesting to hear the views of builders who have carried out work with the aid of these elemental bills.

In passing it may be interesting to note that the elemental bill, if it is widely adopted, will in turn almost certainly have an effect on the traditional method of preparing working drawings. Elemental bills may beget elemental drawings. Examples of this tendency were clearly in evidence at the recent small exhibition and symposium at the RIBA on "Drawing Office Technique."

Whatever the initial difficulties may be, the great merit of the elemental bill is that it represents a move away from the increasing separation which has developed between architect, quantity surveyor and builder. It is in my view in line with the needs of architects in performing their proper function of designing buildings with due regard to architectural economics.

New Methods and Experimental Techniques

Under this heading I should like to discuss the economy—again using the term in its broadest sense of value for money—which can be achieved (*a*) by the introduction of new technical methods and experimental work, and (*b*) by collaboration between architect and builder or architect and manufacturer. In both cases, the technique of cost control—of cost analysis and then cost planning—is an essential tool for establishing criteria.

I prefer for the sake of clarity to outline the development of experimental work which has occurred quite naturally within the housing division of my own department. The cost analysis schedule which is shown in Table B demonstrates by its percentages the elements of building in which a real effort to achieve savings becomes worth while; and in any large public office a remarkable range of alternatives can be tried out at one and the same time. The housing division of my department, for example, is divided into about 20 teams and each team may have three or four separate building schemes in progress. It is therefore quite possible to carry out in practice, under normal contractual processes, three or four different methods of designing and constructing the structural frame of similar tall buildings, a number of different ways of designing and fixing external panel walls, or cladding, or balcony fronts, or various types of floors for similar spans and loadings, and so on. It has also been possible, as a result of having a programme of buildings, to carry out joint design work with certain manufacturers of factory-made components. This has considerably reduced the cost to the client or has resulted in a much higher standard of finish at the same cost.

A senior architect holding the position of development assistant has the responsibility of seeing that all the structural elements, services and components are made the subject of investigation and that these investigations are spread evenly throughout the division. The teams of architects who build are, however, responsible for carrying out the individual experiments and in fact are continually producing ideas for development and research, so that the spirit of initiative remains very much with these groups.

The organisation is a loose one and by no means perfect, but some important savings have been made. Experiments with single-stack plumbing have shown that a saving of £10 to £12 per flat can be achieved and this method of plumbing is adopted, where applicable, throughout the division. Experiments with branched flues indicate that, subject to careful selection of the kind of solid fuel appliances to be used, savings of from £10 to £30 per flat are possible. An investigation into alternative kinds of foundations for cross wall systems of construction for given spans and for all the conditions of soil commonly to be found on London housing sites provided a most useful series of design charts (of which Fig. 1 is an example) for ascertaining quickly the most economic foundation type for a given block. The individual stove enamelled clothes-drying cabinet, which is provided for all flats without gardens, is a good example of the success of co-operation with manufacturers. Over a

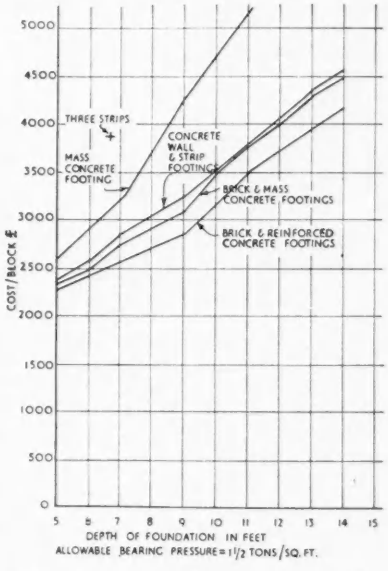


Fig. 1.—Graph showing comparative costs of various kinds of foundations for a typical block of flats.

period of several years this unit has been improved and the cost has been halved—a saving of well over £10 a flat.

The difficulties of carrying out new techniques and comparatively untried methods of building within existing contractual procedures led me to initiate the major experiment which the LCC is now undertaking at Picton-street, Camberwell. The object of this experiment was to achieve collaboration between architect, builder, quantity surveyor and engineer at the design stage.

Although the full financial results will not be known for some time, a few advantages are now becoming obvious. First are the opportunities for preplanning and better organisation of work which are opened up to the contractor. The first of the tall blocks in the scheme has been completed several months ahead of similar blocks in other contracts. The second tall block should reduce the time of construction by at least another four months (i.e., 11 months for the construction including foundations of an 11-storey block containing 84 flats).

Secondly, the design team has been able to take the fullest advantage of the contractor's plant when making decisions about the form of structure and whether elements should be precast or cast *in situ;* also which of these elements should be prefabricated on the site.

Thirdly, a number of specific problems have been studied which will have the greatest value in future housing work. These include:

(1) The extent to which plaster can be eliminated on concrete surfaces by the special treatment of formwork.
(2) The economics of prefabricating timber floors, wall panels, etc.
(3) The economy of cross wall construction as opposed to column and frame.
(4) The study of suitable external facing materials on lightweight dry construction panels.

Conclusion

I outlined in my opening paragraph some of the difficulties which face the architect and the building industry when any consideration has to be given to the subject of the economics of architecture. It is only too easy to see the position as one in which the old-established collaborations are disintegrating, and the common understanding of problems is disappearing. From what I have said, however, I hope that it will be clear that a process of integration is beginning to take place and that the general pattern of development in the future can at least be anticipated.

It will I think be necessary first of all to offset the increasing complexities of building types, hospitals, laboratories, schools, etc., by an intensification of serious research which will bring together various specialised skills and will define exactly and objectively the needs of particular types of buildings. Work of this kind can only be done effectively by a considerable expenditure of time and money and will generally have to be undertaken at a national level by Ministries, by the DSIR or such independent bodies as the Nuffield Trust or the post-graduate schools in Universities. Work scientifically undertaken in this way could extend and widen the knowledge of specialised building types throughout the profession and architects, wherever they may be, could contribute to the national need for economical building.

The economies that spring from exact knowledge of requirements could be still further extended by the use of cost control as an instrument at the design stage. Here the contribution must come from everyday practice and bodies dealing with programmes of work such as local authorities have a special responsibility. The quantity surveyor must join with the architect in devising and extending this use of cost control. The cost analysis must also be supplemented by a wide range of alternative methods of building which should be studied so that the cost of component parts can be used by the designer in assessing alternatives. I have said little about the builders' contribution: it is beyond the scope of this paper. I need hardly add however that the efforts of the architect will need to be balanced by a corresponding effort by the builder himself in those spheres of site organisation and production which are his proper province.

Speakers' Introduction

FOLLOWING the President's inaugural remarks, the speakers summarised their papers (printed *in extenso* above). DR. WESTON said that building costs were likely to go on rising for the next 20 or 30 years and maintenance costs proportionately. An examination of the relationship between first cost and running cost was needed. "We must aim at proving that it is justifiable to increase the initial costs of building if we can find the materials to reduce running costs," said the speaker, adding that if the cost of maintenance could be reduced by, say, £1,000 a year, it would justify the spending of about £18,000 in improving construction.

DR. MARTIN, who illustrated his introduction with a series of slides, said that people had it fixed in their minds that architects were men who spent a lot of money. "We now have to convince people we are also the means of saving them a great deal of money," he declared. To build a school, hospital or laboratory was a complicated problem. To draw up a brief for a single building based on opinions or hunches was likely to be wasteful, and it could be terribly wasteful to use information of that kind throughout a whole programme of buildings.

Systematic research in the field of school building had produced some impressive results. In the case of primary schools, the country spent £52.5m. between 1951 and 1955. If the rise in building costs of material and labour had been accepted, said Dr. Martin, the cost of that programme would have been £58.8m. They were held in check because at the centre there was a definite effort to discover how the various parts of the buildings would be used and how reasonable economies could be obtained which would still leave the schools as good working units.

The speaker concluded by making two points: one, that cost data from specialists on all aspects of building should be collated by some central organisation for issue to the architectural profession; and second, that the present big building programme offered excellent opportunities for an investigation of costs.

Discussion

IN opening the discussion, MR. S. N. ROSE (Ministry of Education) outlined the method of cost control and the architect/quantity surveyor liaison currently in use in the Ministry of Education. The basic concept is, he said, the use of cost control at the design stage. At the end of the investigation period the architect will be aware of the approximate area he has to provide. He operates his first control by choosing a cost per foot super of floor area for the project. The design from now on is always related to cost. A sketch design will be available, and the architect can provide some rudimentary indications of the standard of construction, finishings, services, etc., required, with an idea of the conditions to be met on the site. Armed with these details, the architect and quantity surveyor meet to prepare the cost plan.

To allow for uncertainties, five per cent. is deducted from the cost per foot super, giving a new and somewhat reduced target. In the cost plan, a cost per foot super rate is considered and allotted to each individual part of the building—e.g., external walls or roof—which is called an element. One or two cost analyses of other reasonably similar jobs should now be produced from files kept for the purpose. If there are no files for a "first-off," there must be some improvisation such as a resort to data published in technical journals. But both architect and quantity surveyor should know the quality of the jobs to which the analyses refer, and a visit should be made to the building. The cost per foot super for each element will be based on the specimen analyses. Few of the rates shown there will be accepted without alteration because they will have to be adjusted for fluctuations in building prices, differing quantities and differing standards of quality.

A complete description of the technique was included, said Mr. Rose, in the first revision of the Ministry of Education Building Bulletin No. 4, to be published shortly.

Upon adding up the cost per foot super of floor area of the individual elements, if the total exceeded the amount allowed, the cost plan must be pruned until it comes into the target. If in doing this the architect is of the opinion that the quality of the building is too low, then he must either reduce the area provided or obtain approval to a higher cost limit.

The cost plan completed, all the costs per foot super for the individual elements can be translated into sums of money by multiplying each by the area of the building. Thus the architect is constantly interested in comparing the costs of alternative materials and methods of construction. The cost plan provides him with a handy guide because, since quantity and cash available are fixed, a rate per unit of measurement results, for his immediate use in his inquiries (e.g., 30s. per yard super for partitions).

As the design period of the programme proceeds, each element undergoes what is called a cost check by the quantity surveyor, when the architect's proposals for a particular element (these are often pencilled and unfinished drawings and sketches) are costed against the amount of money available on the plan. The plan is not rigid or inflexible for if it becomes clear that one particular aspect of the job has been underrated, then the figures are adjusted and the rates of one or more of the other elements reduced to balance. As things are bound to be fluid right up to the time when the drawings are ready for the quantity surveyor, a final cost check is carried out just before the preparation of the working drawings. This ensures that the quantity surveyor has not missed any major changes decided in the architect's office; mostly it is a mere repetition of former checks.

In due course the working drawings are prepared and forwarded to the quantity surveyor, the order of delivery being arranged

by elements, so that the quantity surveyor can start by preparing the bills in elemental divisions. Once the elemental bill has been priced, the cost analysis is ready-made and the abstracting into elements that would be necessary with the trade-by-trade bill is obviated.

Having kept so close a hold on costs throughout the design, when the bills go out to tender there is reasonable confidence that the answer is known and that there will not be any rude shocks. If a negotiated tender is contemplated, a contractor can be brought into the cost checking, he and the quantity surveyor carrying out the process independently and negotiating any wide discrepancies. Where this has been done the tender figure is virtually known beforehand; this, though viewed with suspicion in certain quarters will very likely provide as much and possibly more value for money as the competitive figure.

To summarise, there are other advantages in the system. The architect is given a document which he can use with confidence for reference purposes. (Drawing numbers are shown wherever possible on the bills.) The quantity surveyor, while employing rather more paper, but no more time that ordinarily, makes his duties immeasurably easier and more efficient right up to the final account. The builder's estimator may be sorry to see the trades to some extent scattered and requiring collection before being sent out to sub-contractors, but nevertheless he sees each item in its exact context as do also the planning and buying departments in his office. The contractor's site representatives, after their initial surprise has subsided, are enthusiastic, for here is exactly the sort of document that is needed in their own offices by staff from the organising agent to the bonusing clerk. And let us not underrate the patent honesty of the elemental bill: if there is a slip in the quantities it sticks out a mile.

Speaking second in the discussion, MR. C. M. NOTT (Herts CC) said that one of the most important points in architectural economics which underlay the three papers was pre-planning. This might refer to the client and his needs; to the earliest possible co-operation between architect and quantity surveyor and perhaps client, so that as much as possible of the work should be covered by prime cost sums in bills of quantities, enabling the building contractor to get the most complete picture of the scheme as a whole. The contractor could then organise.

Checking Variations

Variations should be kept down to a minimum. He knew of one large contracting and industrial design firm which even went so far as to place a premium on the making of variations during construction by contracting initially to continue unchecked all works until the architect had not only issued a signed variation order but had also negotiated and agreed a sum price for the variation. He was not advocating such a change for all contracts, said Mr. Nott, but there was no doubt that any course of action which would expedite the settlement of final accounts and also the calculation and passing of maximum safe cash payments at interim stages in contracts would eventually reduce costs in the industry. A contractor would normally add a sum of up to 5½ per cent. to the tender to cover the high rate of interest on money locked up in the contract; the architect's aim should be to save this. Architectural economics was a subject which should be incorporated into the training of architects in more detail than before; similarly, there must be instilled into the QS students sympathy with the aims of the architect.

As to who should accumulate data for cost analysis, he personally hoped that this job would naturally fall to the quantity surveyor, because he should be in a better position to adjust the information held. As to elemental bills, there was no doubt that there was scope for activity in that direction. The actual number of elements was perhaps of less importance than consistency of practice in layout and allocation of items to headings, although the number depended fundamentally on the number of functionally separable parts of the building. But the builder's estimator must be considered. One thing which elemental bills or cost analysis under elemental headings from normal trade bills did throw up most clearly was the effect on total price of all the various labours arising with a particular material or construction, because they were grouped together.

MR. CECIL HOWITT (Nottingham) said that not enough stress had been placed on early negotiations with the builder. It should be possible to find, say, three of the type the job required, and select one. It would save much of the work of settling up at the end. "Building," said the speaker, "is like hotel cooking. You get three types of service: high quality, rapid production, or low cost. One of these comes up on top, and the same is true of building; you can seldom get all three together." To cut housing costs, he added, we should take a lesson from the most profitable of all ventures in cooking—Lyons' Swiss roll, made by the mile and cut off in ½-in. sections.

"Architects should consult builders more," added Mr. Howitt. "Improvement in equipment and methods is so rapid that the architect cannot keep pace. The only thing is to get in touch with the best of the builders and use their brains. Economy is the Sabrina-dimension of all our building schemes, and unless we look after that, the small office in private practice will close."

Plea for Metric System

MR. PETER WINTON-LEWIS (London) suggested that money could often be saved if clients considering a building consulted an architect before buying the site. He also put in a plea for the metric system to be introduced into building, as it would enable every component to be interchangeable.

MR. GORDON STEELE (London) said that the purpose of research was not only to give the building industry the information on which it could make the right decisions but to give it quickly and in a convenient form. The data should come from a central organisation. The National Federation of Building Trades Employers had given a lead through their advisory system, which was administered from regional offices. If architects were the leaders of the building team, then it was their job to get something going.

MR. CLIFFORD CULPIN (London) said that a man was probably more concerned with the house in which he lived than with the shop in which his wife bought provisions or the factory in which he worked. "What we, the architects, want this man to have is value for money, and if we are allowed to play any part at all we must see that he gets it," he added. With the shifting of responsibility for producing houses from public to private enterprise, housing had largely passed out of the hands of the architect. This was a problem with which the Housing Committee of the RIBA was trying to come to grips.

Architects, said Mr. Culpin, were now winning over the building societies, but in any case, while at the time of erection the architect's design might not have been welcomed by a society, after the house became established it almost always increased in value. The RIBA small-house design scheme, shortly to be announced, offered the house-building public unique value for money in the form of anonymous designs that were the finest the profession could produce.

Mr. Culpin made a plea to local authorities not to wish on an architect a quantity surveyor without previous reference. Apart from anything else, such a practice made cost data difficult to obtain.

Friday's Discussion

THE discussion on the papers continued on the Friday morning, when Mr. Jefferiss Mathews and Dr. Martin briefly summed up the previous day's deliberations. MR. MATHEWS felt that one of the constructive outcomes might be a study of how research sources might produce the costing data desired. Another might be the question of further collaboration with builders.

DR. MARTIN suggested that study might be given to the people who were going to use the cost data when prepared. First, there was the research worker; next, the general architectural practitioner working on broad programmes, whose main function would be to experiment on the ground. And, third, there would be the private practitioner in general practice; he should know where to get the information, but he could not expect that it would be something he could order just through the post. Cost analysis was a serious subject and deserved serious study.

Cost Control Experiment

MR. G. GRENFELL BAINES (Preston) then opened the discussion. He said: Perhaps some of the delegates may be interested in our experience of using cost control, by analysis and cost plan, as part of the design process. Only last week we decided to extend our experience by circulating a number of architectural organisations, official and private, offering to exchange our cost analyses privately.

As comparison is such an important process in designing to cost, we find it important that figures published generally should be exactly correlated. To reach the same basis firmer definitions of what comprises an element are necessary, otherwise comparisons can be misleading. Different systems of construction can make definitions difficult, different methods of planning can do so, too; for instance, there is quite a difference in the work below ground, and roof elements in single or multi-storey development, and so it is often helpful to compare combinations of elements in the cost plan.

One useful combination is work below ground, frame, floors, roof, cladding and windows—what may be called the "shell." Then floor finishes cannot be considered apart from the necessary preparation work, as screed, and these can also be affected by housing of services within the floor when arriving at the most economical *all-round* solution. On one job, our structural design, involving slender mullions at frequent intervals, resulted in an 8 per cent. contribution to the cladding if only the verticals were exposed, while to expose horizontals members gave a further 12 per cent. Naturally, these economies had to be weighed with the resulting appearance, but in these days when frames are being wrapped up in expensive claddings, duplications need careful watching.

I think (continued Mr. Baines) the most difficult process is that of detailing within the cost plan. In drawing up a cost plan with the QS there is a real danger at the sketch plan stage of wishful-thinking mentality developing. To keep the final details and their implied costs constantly in line with the cost plan involves innumerable adjustments up or down in this and that and requires the

continuous joint effort of architect and quantity surveyor. For this reason we find it invaluable to have our own QSs in the office, acting as co-designers and enjoying equal status. I hope that this Conference may start the free exchange of information, by both public and private channels, subject, of course, to clients' agreement.

Dr. Martin made it clear that the fruits of research will not fall into our mouths. It is not easy to translate them into design; there is a temptation to say "so what?" when confronted by masses of facts and figures, and from "so what?" to "know how" is a tricky step involving detective work and hard thinking. But the brilliant work of the Nuffield Group on Hospitals shows that using research pays.

I could not follow Dr. Weston's figures of £285 for the maintenance in the life of a house—what life has he allowed? Most authorities are finding it impossible to maintain for £10 per annum and on a 60 years' life that comes to more than a third of the original cost. We were told the other day by the Ministry of Works that a third of the building industry is engaged in maintenance; these figures seem to agree better. Perhaps I have not understood him fully, and he may be interested to know that one of our industrial clients will not spend more than £4,000 to save one man's work.

Maintenance costs go further than those of the financing authority. Some time ago in one of our large housing projects we were forced midway to reduce flooring specifications to save capital cost. The new tenants complained it was costing them 1s. 10d. per week in polish and cloths to clean the floors. They would have been willing to pay 1s. per week more rent to have had floors like the original houses. At the rates of interest and repayment then prevailing this represented £65—the better floors would have only cost £35; obviously we had made a false economy. The lessons here are that it is easy to make false economies on floors finishes and running costs must be considered in combinations.

We do not take off "elemental bills," but our QS uses a large abstract sheet with various headings under which he builds up the cost of elements when arriving at a cost analysis. Is it not possible for the builder's estimator to use a similar device to take him back in the opposite direction when pricing a Bill drawn up in elements? I rather think so, and feel that the difficulty mentioned yesterday will soon be overcome.

We are finding that our cost analysis makes a good basis for estimating progress and now issue our clerks of works with the elements expressed in percentages; from these, by his estimate of the percentage completed, he can build up a realistic assessment of how far the job is complete. Before long we can see this leading to more realistic interim valuations with less trouble for the QS, which will repay him for the work done in the cost design stages.

"Cost of Legislation"

MR. P. V. BURNETT (London) said that property and profits taxes had a bad effect on good building. Clients didn't much care how flimsy a building was because maintenance was allowable against tax. In a reference to what he called "the cost of legislation," Mr. Burnett instanced a case of a client of his who was putting up quite a small building. The ground rent was £400 a month, and it was eight or nine months before the plans were approved, so he was involved in a charge for about £3,500 before building even started. "Clients building office blocks may have to add anything up to 10s. per sq. foot of floor area to carry the cost of building and planning legislation," he added. It seemed absurd that we should spend a lot of time trying to save a few pence on construction when so much was thrown away by the costs of delay.

MR. SHEPPARD FIDLER (Birmingham) referring to suggested collaboration with builders, said that one had to move carefully, but in Birmingham they had started collaboration with a firm of builders who also acted as constructional engineers. Already, by using a new flooring system they had saved money. Architects should be careful not to frustrate architecture; often they went out to produce what they thought the client wanted; too often it wasn't architecture but it was too late to do anything about it.

MR. JOHN STILLMAN (London) felt the architect would find cost analysis a great advantage if only because it could enable the final cost to come out somewhere near the estimate. But he would like to ask three questions: (1) Could cost analysis help with buildings that were not exactly similar? (2) If you could not apply cost analysis, did elemental bills help, and did you have to pay extra for them? Did tenders match up with the estimated bill? (3) And now we had started on the subject, was there any other way of getting the desired effect?

In reply, DR. WESTON said that elemental bills simplified cost analysis. The latter could help in predicting the cost of building. The validity of tenders was a very important point; there were many factors going to making up a price, some strictly logical, others of a more uncertain nature. It would be unwise to rely on a single scheme if cost analysis was to succeed in ironing out some of the difficulties which had been mentioned.

Costs and the QS

MR. A. W. CLEEVE BARR (LCC) said that architects' relations with quantity surveyors took a wide variety of forms. 99 per cent. of quantity surveyors regarded bills of quantity as ends in themselves. Architects had to rub in that they didn't want just beautiful bills but some real assistance in keeping down costs. It was a QS's job, not an architect's, to get out cost data.

In collaborative building, the QS ought to be a member of the team, if only for a few weeks. And he ought to be on the spot. If not, the sort of information that tended to be given when you rang up was that the cheapest form of flat was the five-storeyed, with balcony access and of infinite length! As for contractors, they did not know all the answers. On one of the LCC estates three contractors were invited to advise on appropriate construction. One said reinforced concrete, the second structural steel, while the third said load-bearing brick walls of medium height. But at the Picton-street scheme, they came logically to the idea of one nominated contractor. The results were interesting and money was being saved. But clients would still require a guarantee that the result of nominating contractors was economic. Free tendering was (thought Mr. Barr) the only general way, but there should be scope for other systems.

He would like, the speaker added, to see the Joint Consultative Committee extended to bring in more junior members. The RIBA took its job so seriously that nothing came out of it unless it was gilt-edged. There was room for a junior organisation which could chance its arm a little more.

MR. N. TWEDDELL (Basildon) thought that the ordinary bill of quantities could become a barrier between architect and contractor. He hoped the RIBA would consider developing an elemental bill which would allow collaboration between architect and builder, but care should be taken not to go too far; such a bill should be for the exceptional case.

MR. LLEWELYN DAVIES (London) said that to control cost we needed deeper knowledge of various kinds of design. Under present circumstances this knowledge could be developed only by organisations. Two problems were to find the right research collaborators and to disseminate the data when found. In the first, the Nuffield Research Foundation were looking for a solution through more post-graduate work. As to dissemination, the profession could help by saying what they wanted and how they wanted it published.

MR. BRYAN WESTWOOD (London) urged that cost should not be allowed to become such an obsession that an architect did not know how to spend money. Members of the AA who had visited Rotterdam recently were horrified at the cost of the offices. But the clients said that they spent the greater part of their waking lives in the offices, and so they ought to be good.

House and Flat Costs

MR. H. S. HOWGRAVE-GRAHAM (Crawley) suggested that in the future Conferences might be tidied up before the next came along, perhaps in the form of a report published about May. He also suggested that there was room for research into the reason why it appeared to be cheaper on the Continent to build high flats than houses. There seemed to be an extraordinary field open somewhere for us to derive benefit from the Continental field of building.

In reply to this DR. WESTON said that the BRS were making a close study of comparative costs of houses and flats.

MR. LESSLIE WATSON (London) said he had been very much impressed by the Nuffield Research Foundation's new book on hospitals. He could wish there were similar books available for other classes of building. He made an appeal to the technical papers to give the costs when illustrating buildings.

MR. C. A. R. NORTON (London) could not see how men would continue to work on building sites when the weather was bad and their feet cold when they could more comfortably work in a factory. He suggested that the RIBA might set up a work study into factory prefabrication of buildings.

In reply to this MR. W. A. ALLEN (BRS) said there had just been completed at the BRS arrangements for carrying out over a 2 to 3 year period a programme of research into factory design and construction, and the Station was particularly grateful to the Midland research board for support in carrying the programme out.

MR. BADEN HELLARD (London) said that a form of elemental drawing had caused trouble with the QS and with the estimator and general foreman. Too few of these last could really understand the fundamental principles; we had not only to educate architects but also the trades foremen in the art of plan reading.

MR. A. G. LING (Coventry) said that he had been trying to set up a research group in Coventry. It was very difficult to get access to all sources of information. The farther one got away from London the more difficult it became to get data. He thought that if Coventry could get a research group going then its work could be made available to private architects. Something of the same sort might be done in all the Allied Society areas.

Mr. Ling made reference to the fact that architects had been asked by the Ministry of Education to "swallow" the 3 per cent. ("we think it is nearer 6 per cent.") added by labour and materials cost increases to the cost of school building. "We should say yes, we will do it. if you will give us time, and if you will do something for us in return by allowing us to devise our school programmes on a 2- or 3-year basis."

MR. HOWARD LOBB proposed a vote of thanks to the speakers. The speakers at the

Conference, he said, had made a very real contribution to the techniques of reducing costs and to the consideration of how such data could be distributed. He also paid a warm tribute to the LCC for their pilot research schemes especially on high flats, and for their generous action in passing on their data to others.

MR. D. E. E. GIBSON seconded the vote, which was heartily accorded.

THE CONFERENCE DINNER

Views on Norwich Architecture

COMMENTS on recent architecture in Norwich were made by the Lord Mayor (Cllr. Arthur South) at the Conference Banquet, held in the Samson and Hercules House on Friday, June 1. Over 400 members and guests attended, and were received by the President RIBA and Mrs. C. H. Aslin, and by the President of the Norfolk and Norwich Association of Architects and Mrs. H. C. Boardman.

After outlining the city's growth and industrial development from the days of the wool trade down to the present diversity of industries, including the newcomer, May and Baker's fine chemicals factory, for which a young architect had designed the office block, the Lord Mayor went on to speak of the city's architecture in general. He admitted that there was "a lot wrong" with the city and its building. In particular he referred to the new shops and the city centre, at present in the process of rebuilding, with the words: "Maybe you don't like what is happening—sometimes we don't like it ourselves.

"Why do we allow these monstrosities?" and "Why do we continue to build neo-Georgian?" were two questions often asked, the Lord Mayor continued. He suggested that the city was trying to find its level between these two by trying to unite the old with the new, "and we hope we are making a fair job of it."

Appealing for the help of the professional architects in finding this level, he admitted the difficulties facing the professional man in persuading the lay administrator what was right and what was wrong. "Lay administrators all tend to be a little hesitant," he explained. "And if you find the new estates a little dreary, it is probably because the lay administrators have not been willing to fall in with the modern architecture you would like to see."

On the side of achievement, he recorded that the city had built 6,000 houses and flats in the last ten years as well as 18 new schools; of the 18,500 children at school there, 10,000 were working either in new classrooms or recently adapted ones. Two million pounds had been spent on school buildings, adaptations and furniture, so over the period they had been spending an average of £1 million a year on these services alone. "I hope in the future in cities such as this there will be a more ready awareness of what our job is, so that each of us will contribute something in our time that our children may be proud of after we have gone," he concluded.

The Lord Mayor was responding to the toast to the City of Norwich, proposed by MR. CHARLES SAXON, Vice-President, RIBA, who said that the success of their conferences depended largely on the reception they were accorded. "In Norwich," he said, "we have the ideal place. It is a long way to get here, but having got here, it is good." He admired the way history was being taught in Norwich and he felt the museums in the city were like no others he had known because they brought the subject right up to date, and he referred in particular to the exhibits in the technology section of the Castle Museums, where, as well as old looms from the wool trade, they showed up-to-date displays of current products from local firms.

THE PRESIDENT, responding to the toast of the RIBA and its Allied Societies, proposed by SIR BARTLE EDWARDS, said that he felt sure this gathering had been the best they had had. The highlight had been the Lord Bishop's invitation to his charming garden and his allowing them to have a service in the Cathedral. Members have tasted every side of civic life. They had seen the city, the country, the water.

MR. H. C. BOARDMAN, proposing The Guests, referred to the presence of his mother, Mrs. F. E. Boardman, "who in 1898 married an architect and became the daughter-in-law of another," and other guests. Also present were the senior members of the Association, Mr. Buckingham; Mr. Wearing, President in 1930; Eric Scott, Honorary Secretary in 1930; and Theo Scott, Honorary Editor.

He would like to thank all those who had helped to make the Conference a success, especially the Secretary, Mr. Tomkins. He must also mention in this category Mr. Spragg and his chief clerk, Mr. Williams. And then the Press—*The Builder, The Architect's Journal*, etc., for their wonderful editions. But he would like to appeal to them to show only the best of Norwich. And to the local Press he would appeal to give the Conference sufficient space.

Architecture and the Church

THE LORD BISHOP OF NORWICH responded. If it had not been that at about the age of ten years it was quite clear to him in what line his life must lie he would have been tempted to turn to architecture. "I should have been a very bad architect," he added. "By this time I should have been the recipient of some sort of eleemosynary fund for depressed architects!

"Why should I have been drawn to architecture?" continued the speaker. "There are certain similarities between your profession and mine, between your dominating ideas and mine, and perhaps between some of your difficulties and mine. On the positive side you no less than I are all the time building for the future. But woe betide us if we forget that in our hands lies a great responsibility."

"There is another thing. We, you and I, are living in the public limelight. We have no business to be resentful when people criticise what we do, our decisions, what we achieve. We may think the criticism is ill judged. But we have to remember that outside ourselves there is a great thing known as public opinion. There is a great public which we serve and it has the right to say when it disagrees with what we do and we have to remember that it isn't only our own ideas that count. It is the impact that they make on public opinion and the spirit of our times.

"I feel great sympathy for the difficulties through which British architecture has been ploughing its way during these recent years. Perhaps rather more yesterday than today, there has been a general assumption through our national life that because the times are new everything that is old and traditional is bad or has nothing to offer for present needs: that the one necessity is for new ideas to meet new needs. Out of that there seems to me to spring in architectural life through these last few years a devotion to such ideas as may be labelled in your minds as 'functional and original.' These can obviously represent elements in any architecture that is alive. A building must be fitted for the purpose it is to achieve and a mere copy of the things that are old cannot ever be architecture, even if it is craftsmanship.

"I rejoice to feel that we are coming through that rather difficult time, complicated for you by the production of new materials and methods of construction. We are coming to realise once more that the only true end of architecture is beauty. . . . We shall look forward to big things in the days to come. The days of English architecture are not dead. Perhaps the Golden Age still lies in front."

Those present included: The Lady Mayoress; Mrs. C. H. Aslin; The Earl of Leicester; Lt.-Col. Sir Edward Preston, High Sheriff of Norfolk, and Lady Preston; The Hon. Mrs. E. Herbert; Mr. Kenneth M. B. Cross; Col. Sir Bartle Edwards, Chairman of Norfolk CC, & Lady Edwards; Mr. & Mrs. F. C. Saxon; Mr. & Mrs. E. B. Thistleton-Smith; Mrs. H. C. Boardman; Councillor C. H. Sutton, Sheriff of Norfolk & Mrs. Sutton; The Dean of Norwich & Mrs. Hook; Mr. E. D. Jefferiss Mathews; Ald. Mrs. L. M. Gilham, Mayor of Great Yarmouth; Mr. B. D. Storey, Town Clerk of Norwich and Mrs. Storey; Mr. R. G. Carter; The Mayor & Mayoress of Thetford; Mr. & Mrs. Rainbird Clarke; Dr. J. Leslie Martin; Dr. J. C. Weston; Mr. & Mrs. R. H. Pointer; Mr. & Mrs. L. W. M. Alexander; Mr. Fello Atkinson; Sir Thomas Bennett; Mr. Philip H. P. Bennett; Mr. & Mrs. J. Gordon Berry; Mr. Eric Bird; Mrs. F. E. Boardman; Mr. D. O. Bond; Mr. & Mrs. R. O. Bond; Mr. Ernest H. Buckingham; Mr. & Mrs. G. S. Buckingham; Mr. & Mrs. P. V. Burnett.

Mr. & Mrs. T. Nelson Cartwright; Mr. & Mrs. H. Conolly; Mr. & Mrs. T. S. Cordiner; Mr. & Mrs. E. R. Crane; Mr. & Mrs. F. Hamer Crossley; Mr. & Mrs. G. Crump; Mr. & Mrs. J. W. A. Cubitt; Mr. & Mrs. Clifford Culpin; Mr. & Mrs. J. Gordon Davies; Mr. & Mrs. Peter Dunham; Mr. B. M. Feilden; Mr. & Mrs. A. G. Sheppard Fidler; Mr. & Mrs. R. O. Foster; Mr. & Mrs. S. Colwyn Foulkes; Mrs. Molly J. Gerrard; Mr. & Mrs. J. E. K. Harrison; Mr. & Mrs. C. E. Hartland; Mr. & Mrs. H. A. Hickson; Mr. & Mrs. C. I. Hobbis; Mr. & Mrs. Cecil Howitt; Mr. & Mrs. L. C. Howitt; Mr. & Mrs. T. A. Jeffryes; Mr. & Mrs. Charles Jewson; Mr. & Mrs. Ian Leslie; Mr. & Mrs. F. C. Levitt; Mr. & Mrs. Arthur Ling; Mr. & Mrs. W. McCrea; Mr. & Mrs. P. Mauger; Mr. Noel Musgrave; Mr. & Mrs. J. Baillie Noble; Mr. C. M. Nott.

Mr. & Mrs. F. J. N. Ormrod; Mr. J. H. Lloyd Owen; Mr. & Mrs. Philip Pank; Mr. & Mrs. D. Percival; Mr. & Mrs. H. C. Rowley; Mr. & Mrs. Eric W. B. Scott; Mr. & Mrs. Theo. Scott, Mr. & Mrs. J. R. Sheridan-Shedden; Mr. & Mrs. Eric H. Skipper; Mr. & Mrs. Edward J. G. Skipper; Mr. & Mrs. E. Steward Smith; Mr. & Mrs. T. W. Snailum; Councillor W. A. J. & Mrs. W. A. J. Spear; Mr. C. D. Spragg; Mr. J. Stuart Syme; Mr. & Mrs. M. Hartland Thomas; Mr. & Mrs. Stephen Thomas; Mr. & Mrs. C. F. J. Thurley; Mr. & Mrs. C. H. Thurston; Mr. & Mrs. C. J. Tomkins; Mr. & Mrs. A. R. Towlson; Mr. N. Tweddell; Mr. & Mrs. Cecil Upcher; Mr. & Mrs. S. T. Walker; Mr. & Mrs. J. F. Watson; Mr. & Mrs. Lesslie K. Watson; Mr. & Mrs. S. J. Wearing; Mr. & Mrs. Bryan Westwood; Mr. & Mrs. Norman Westwood; Mr. Pembroke Wicks; Mr. H. R. Williams; Mr. B. A. P. Winton Lewis; Mr. F. R. Yerbury; and Mr. M. J. Youngs.

Carlisle Cathedral Appeal

MORE than £20,000 has been contributed by the Friends of Carlisle Cathedral during the 22 years of their existence, it was announced at the annual meeting on May 29. It has been spent on maintaining and restoring the fabric of the cathedral, and providing a new vestry. A national appeal is to be launched in a few weeks for £100,000 to prevent the cathedral becoming what Mr. S. Dykes-Bower, FRIBA, has called "a shapeless mass of crumbling stone."

£20m. NEW TOWN FOR KENT

A Private Enterprise Scheme

A PROJECT estimated to cost £20m. for a private enterprise new town to be built at Allhallows-on-Sea, Kent, has been announced by the Dolphin Development and Management Co., Ltd., a subsidiary of Richard Costain Ltd. Application is to be made through the Strood Rural District Council to the Kent County Council for the approval of the scheme, which will involve the development of a site of some 800 acres at Allhallows-on-Sea. The new town will be designed to accommodate an ultimate population of 25,000 people.

The site proposed for development is on the estuary of the Thames opposite Southend-on-Sea. It is in part agricultural and in part in use as a caravan site and pleasure resort.

Allhallows-on-Sea has an existing population of approximately 400 and is surrounded by a number of parishes, having a total population of some 7,000 people, who would be served by the social and commercial development to be centred in the new town.

The scheme, which it is estimated would take approximately ten years to complete, has been welcomed by the British Petroleum Company whose oil refinery, the extension of which creates an ever-increasing housing problem for their employees, lies some two miles distant. Moreover, adjoining the refinery the South Eastern Gas Board are about to construct a plant whose employees in turn may also be expected to avail themselves of these facilities.

Primarily, the new town will be developed on a home ownership basis with the provision in parallel of shopping facilities and social services. Subject to all necessary approvals and with the co-operation of the public and local authorities a start is to be made on lay-out, civil engineering services and house construction in the late autumn of this year, stage one involving the erection of some 500 dwellings designed to provide variety in price, accommodation and design.

Comprehensive Development

The scheme in its dimension is designed to avoid the evils of piecemeal development and has been planned on such a scale as to allow for natural expansion. It is being planned with the object of securing:

(a) The provision of housing for all classes of the community in close proximity to their work;

(b) that as an integral part of the development, shopping, places of entertainment and recreation, and cultural, religious, social and sports facilities are provided on a properly preplanned basis; and

(c) the introduction of industry other than that connected with the refinery and its adjuncts in order to diversify the community beyond that of a one industry town.

The consulting architect for the project is Mr. Frederick Gibberd, FRIBA, MTPI, architect planner for Harlow New Town. The new town will have three neighbourhoods with "round the corner" shopping facilities supplementing a town centre which is intended to be sited immediately adjacent to Allhallows itself. The centre would provide some 60 shops with accommodation for service industry. The outline plan also makes provision for a central park and the development of the seaside and foreshore.

The conception of a commercial new town at Allhallows has arisen primarily out of the need to accommodate those having their place of work in the BP Kent Refinery and associated industry; and secondly, because it is confidently expected that such a town with its amenities will certainly attract industry and residents alike.

Members of the development company include Sir Richard Costain, chairman of Harlow New Town, Mr. W. Eric Adams, former general manager of Harlow New Town, and Sir Howard Roberts, until his retirement Clerk to the London County Council.

FIRM PRICE TENDERING

Specialists and Sub-contractors' Statement

THE council of the Federation of Associations of Specialists and Sub-Contractors has issued the following statement on firm price tendering:

Like other organisations which are contributing to the fight against inflation, the members of the Federation of Associations of Specialists and Sub-Contractors have been considering in their council whether they can go further in quoting firm prices. Since the end of the war the council has recognised that there should be a return to firm price tendering as soon as possible, and it has urged the members of the Federation to take individual action in that sense wherever practicable. In many cases there have in fact been, since 1946, agreements, either tacit or expressed, with Government departments defining the circumstances in which, and the figure up to which, firm prices will be quoted. The agreements have been reviewed and, in appropriate cases, revised from time to time when departments so requested and have been followed in quotations for non-Government work.

Conditions governing the quotation of firm prices are not, however, the same at any given time for all sub-trades. The wide range of fluctuations in the prices of non-ferrous metals, the shortage of reinforcing rods of suitable sizes and the extended delivery period of standard components (one widely used component has at present a delivery period of more than 30 weeks—and will be invoiced by the manufacturer at the price ruling at the date of delivery) are factors which at different times have constituted a practical limitation on what could be done by individual trades.

Bearing in mind, however, the existence and nature of these agreements and the high proportion of the total cost of any building project which is represented by the work normally carried out by the specialists and sub-contracting trades, it will be appreciated that for nine years the members of FASS have been making collectively a considerable contribution to the movement for a return to fixed price tendering wherever it could be anticipated that a building would be completed within a period during which major price movements could be reasonably forecast. There is only a certain amount of work which can be carried out in a given period and this implies, in practice, a financial limitation. To establish higher financial ceilings up to which firm prices may be quoted, while retaining a condition as to the period within which the work must be completed, would be little better than an attempt to mislead the public.

BUILDING COSTS

"Architects Must Give Lead in Checking Rises"

SPEAKING of the problems created by steadily mounting building costs, at the annual general meeting and luncheon of the Eastern Counties Regional Federation of Master Builders, at Southend-on-Sea, on June 2, MR. R .W. RICKETTS, national vice-president, said that members of the FMB had been impressed by the way in which architects in America and in Germany had simplified designs and standardised their components to speed erection times.

"We can see what can be done in this way without going outside this region," he continued. "I think that schools' architects and their contractors have done a pretty good job in the last six years in reducing the cost per place despite the upward surge of materials and labour costs. If schools now were of the same kind with the same standard of equipment and finish as they were in 1949, it would cost £490 a place provided in each secondary school. The current cost limit allowed is £264 a place.

"How has this been achieved? First, by cutting out the frills in the specifications and, more importantly, by standardising designs and equipment.

"Builders look to the architects now to give the necessary lead in other kinds of building work. It is probably true that we are in the experimental stage at this moment, trying to find the right forms of construction which will prove the most economical for different kinds of buildings. But one thing is certain—we must seek the solution to rising building costs. I feel sure that it lies in simplification."

WOOD WORKERS' CONFERENCE

Direct Labour Resolution

"THE Public Works Department at Sheffield has saved the city £150,000 in direct competition with private enterprise," said MR. J. SHAW, of Sheffield, at the annual conference of the Amalgamated Society of Woodworkers at Morecambe on May 23. He considered that it was an excellent department and that other cities could do the same thing. In Sheffield 1,200 men were employed with good working conditions, and the PWD maintained more than 45,000 houses. "If one city can do it so can others," he said.

MR. P. O'GRADY, of Leeds, said that the problems of the building industry could never be solved until it was nationalised. While there were many obstacles in the way an attempt could be made to produce the right conditions for nationalisation by making more use of direct labour schemes.

The conference passed, by a large majority, a resolution declaring that more local authorities should employ their own building departments, and also urging the Labour Party to adopt a policy of direct-labour building in the nationalised industries as well as by local authorities.

The conference voted unanimously in favour of restoring the system of building four Council houses to one private enterprise house, and asked for a restoration of housing subsidies and a reduction of housing loan interest.

IN PARLIAMENT

By Our Parliamentary Correspondent

Fixed Price Tenders

ONE of the first matters to be raised when Parliament resumed on May 29 after the Whitsun recess was that of fixed price tenders, an experimental introduction which had been announced by MR. PATRICK BUCHAN-HEPBURN, the Minister of Works, before the House adjourned.

The Minister told Mr. Nabarro that he proposed to make no arrangements in his policy for these contracts which would permit price variations or escalator clauses in such contracts for any increased charges and tariffs by the nationalised coal, gas, electricity and transport industries which might occur during the currency of the contracts, and in consideration of the fact that private enterprise contractors had no control over the charges and tariffs imposed by the nationalised industries.

"The point of my experiment," he said, "of seeking fixed price tenders for selected projects undertaken by my Ministry is to find contractors who are prepared to accept all risks of fluctuation in costs."

MR. NABARRO.—While fixed price contracts are a very desirable principle, how can the policy be effective so long as the nationalised industries, notably the coal industry, continue the sort of practice announced this morning of increasing the cost of coal leading consequentially to increases in the price of gas, electricity, freights and steel, and to further wage demands? Will the Minister attack the matter at the source, that is by a policy of stabilising the charges of the nationalised industries?

MR. BUCHAN-HEPBURN reminded Mr. Nabarro that this scheme, which was limited to certain projects by the Ministry, was voluntary, and there was no compulsion whatever on anyone to come forward on the terms they suggested. The wider subject raised by Mr. Nabarro was not for him to answer: it was for the Ministers concerned with the nationalised industries.

The Roads Programme

FURTHER details were sought, and given by MR. HAROLD WATKINSON, Minister of Transport, about the roads programme for the present and following financial years. But in answering questions on May 30, he declined to be drawn into any announcement about economy cuts in those programmes. "Lord Hinchingbrooke," he said, in a written reply, "cannot expect me to anticipate any announcement of the Government's decisions about the proposed economies foreshadowed by the Chancellor of the Exchequer."

He did however indicate some of the more important road improvement schemes on which constructional work would, he hoped, be begun during the current financial year. From that list it would be seen, he pointed out, that he had tried to achieve a fair balance between schemes relieving traffic congestion in cities, and those improving main stretches of trunk roads. The list was:

Trunk Roads.—Preston by-pass, Lancashire; Western Avenue, dualling from Victoria Road to Park Royal Station and from Alperton Lane to Greenford Railway Bridge; Watford Way, dualling from Mill Hill to Finchley Road; Great Cambridge Road, dualling from Burystreet to Carterhatch Lane; Eastern Avenue, rebuilding of Newbury Park station bridge. Kingston by-pass, Hook Road flyover; A.1, dualling from Alconbury Hill to Water Newton by-pass; East Retford by-pass, construction from Elkersley by-pass to north of Checkerhouse; A.1, Doncaster Mill Bridge; A.1, Wetherby by-pass; A.1, Allerton Station (Hopperton) by-pass; A.1, Sinderby Bridge and approaches; A.6, London Colney by-pass; A.4, Newbury east-west relief road; A.45, Meriden by-pass; A.23, Handcross by-pass and dualling from Handcross to Crawley by-pass; A.48, Neath by-pass (second part); A.48, widening from Tabernacle Chapel to Llanfair Discoed Arches and from Redhill to Stormy Down.

Classified Roads.—Dartford-Purfleet tunnel; Runcorn-Widnes bridge; Barton high level bridge, Lancashire; Elephant and Castle improvement (Part I); Route 11, City of London; Strand, widening; Birmingham Inner Ring Road (Suffolk Street-Queens' Drive); Southampton Inner Ring Road; Leeds, Headrow extension; Plymouth, Eastern approach road, Gaskin Street-St. Andrews roundabout. Swansea east side approach road, Vale of Neath railway bridge reconstruction; Slough, reconstruction of Uxbridge Road bridges; Cheadle (Cheshire), completion of Kingsway; Gloucester by-pass (part); Billingham saltworks diversion; Christchurch by-pass; Stone by-pass (Staffs.).

He also gave the following list of 23 schemes where it was proposed to widen A.1 between London and Newcastle each costing more than £100,000 and 22 of which provided for dual carriageways. Those schemes, he said, when completed would transform A.1 into a major north-south road link designed to cope with modern traffic conditions. These schemes would be authorised in the years 1955-56 to 1958-59:

1. Page Street to Mill Hill, Middlesex; widening: 2. Between Apex Corner and S. Mimms by-pass, Middlesex; widening; 3. Between A.411 and Dyrham Park, Herts; widening; 4. Biggleswade by-pass, Bedfordshire; 5. Sandy to A.428, Bedfordshire; widening; 6. Alconbury Hill to Woolpack cross roads, Hunts; widening; 8. Norman Cross to Water Newton by-pass, Hunts; widening; 9. Wansford-Water Newton by-pass, Hunts; 10. Wansford Bridge to Stamford boundary, Soke of Peterborough; widening; 11. Colsterworth diversion, Kesteven; 12. Grantham by-pass, Kesteven; 13. East Retford by-pass, Notts. (Elkersley by-pass to Five Lane End); widening; 14. East Retford by-pass, Notts. (Five Lanes End to north of Checkerhouse; widening; 15, Doncaster by-pass, Notts., and W. Riding; 16, Wetherby by-pass, W. Riding; 17, Between Wetherby and Allerton Station, W. Riding, widening; 18. Allerton Station (Hopperton) by-pass, W. Riding; 19. Between Leeming and Catterick, N. Riding, widening; 20. Catterick by-pass, N. Riding; 21. Browney Bridge to Farewell Hall, Durham, widening; 22 Gosforth to Gosforth Park, Northumberland, widening; 23. Stamford Inner Relief Road (single 33ft. carriageway).

Mr. Watkinson, asked what stage the planning and execution of the new motorway to the north of England had reached, said.—Objectors are being interviewed as quickly as possible, and I hope in the next few months to make the scheme establishing the line of the road between St. Albans by-pass and Watford Gap in Northamptonshire together with the spur to Dunchurch. I shall then publish draft orders dealing with alterations to side roads, public footpaths, etc. The consulting engineers have completed the prototype bridge designs and these have been approved by the Royal Fine Art Commission. Substantial progress has also been made with the preparation of detailed drawings, bills of quantities, and land reference plans for this section. My intention is to proceed with this portion of the road at the earliest possible moment.

On the section north of Watford Gap to Doncaster, the preliminary survey has been completed and the necessary drawings required for the draft scheme are being prepared. I have to discuss with the Minister of Agriculture, Fisheries and Food, the effect on agricultural interests of the proposed line. I hope these discussions will be completed in time for me to publish a draft scheme before the end of this year.

Slum Clearance Compensation

A NUMBER of changes which widened the scope of the improved compensation payable under the Slum Clearance (Compensation) Bill were effected when the measure was considered on report and third reading in the Commons on May 29.

By one of those alterations an owner-occupier, who had left either because of military service or business within the last 12 months before December 13, 1955, which was the date on which the Minister announced the provisions of the Bill, will, if otherwise qualified, benefit from the Bill although not in occupation at the time. Similar benefit will also be conferred on an owner, if otherwise qualified, who had vacated a house as part of slum-clearance operation before that date, although on that date the house was still standing.

A new subsection was inserted to ensure that an owner-occupier who demolished his house by agreement should have the same compensation as one who demolished his premises after an order from the local authority. This subsection, said MR. ENOCH POWELL, Parliamentary Secretary, Ministry of Housing and Local Government, met with the approval of the Association of Municipal Corporations, who, as slum clearance widened, would be able to make use on an increasing scale of the voluntary procedure of demolition by agreement rather than by demolition order.

A proposal to enable the courts to discharge or modify the outstanding liability of an owner-occupier who was a mortgagor or was buying the premises under a tenant-purchaser agreement after the amount payable under the Bill had been received by him was agreed to on a division by 208 votes to 173.

The Bill was presented in the House of Lords on May 30 and read a first time.

Playing Fields and Housing

THE need for more playing fields and the conflicting demands for land for that purpose and for housing were mentioned in the House of Lords on May 29 during a debate, initiated by the DUKE OF SUTHERLAND, calling for a lead from the Government in the provision of playing fields.

He pointed out that the great new housing drive was making playing fields more essential than ever. As more and more land was given up to houses, the more open spaces in cities and towns were being reduced. Population was increasing, and there were the claims of farming and food production. It was, therefore, essential for the Government to see that in all town and city plans adequate playing field sites were provided in proportion to the population.

Such playing fields must be evenly dispersed through all the districts so that children and adults alike enjoyed the same facilities no matter in what area they lived. The ideal would be to have the fields within easy approach of the housing estates. In

planning provision of playing space in new towns, it had to be realised that the population there tended to be younger on average than that of an old town, and that the need for playing fields would be greater.

LORD SILKIN said that in development plans, such as that for the county of London, certain areas had been designated as public open spaces or playing fields against the time when the land would become available. That might be a matter of 10 or 20 years, but the condition of the properties standing on those areas was often such that they had not a long life ahead of them, and in the development plans preparations were being made for the time when those properties would be pulled down and the land could be used for such purposes as playing fields.

LORD MANCROFT, Under-Secretary, Home Office, said that last year the Government spent £142,000 on playing fields compared with £6,000 the previous year. But the credit squeeze might mean that figure would not be maintained this year. Voluntary work should continue, for the burden could not be shifted to the taxpayer or the ratepayer.

One of the most popular requirements was swimming baths. That was the most expensive form of sport they could find. Recently they had had to turn down a scheme in the Manchester area for a swimming bath which would have cost £250,000. That was unfortunate. In the financial year 1955-56 the Government had approved schemes for 73 playing fields and 55 pavilions, and that was apart from voluntary and unaided schemes.

Because of the general restrictions on public borrowing announced recently by the Government some local authorities would have to wait for a time before they could carry out all their proposals, but these schemes took some time to prepare, and there was no reason why the authorities should not carry on with the preliminary work and be ready to start if and when they got their loan.

There was too little good land in this country and too many people wanted it.

The Clean Air Bill

WHEN the Clean Air Bill was considered in committee by the House of Lords on May 30, LORD BURDEN moved an amendment to delete from the clause dealing with the height of chimneys the exemption granted for residences, shops and offices. He said that there seemed to be no necessity to exclude such premises, because fuel-burning plant installed in them could create a nuisance, particularly where shops and offices were concerned. He also asked whether the term "residences" included hotels, and if, as he understood, it did, why should offices, shops and residences be excluded?

The EARL OF MUNSTER, Minister without Portfolio, said that the clause, which provided that certain new chimneys would be of sufficient height to prevent, so far as practicable, nuisance from the smoke, grit, dust or gases discharged from them, had been included to apply chiefly to industrial chimneys and to the chimneys of buildings such as laundries and incinerators. There was no necessity to omit the words which Lord Burden desired to omit, because the height of chimneys could be regulated by building by-laws made under the Public Health Act, 1936, which enabled general requirements to be imposed about the heights of chimneys of houses, shops and offices, and it was not considered that further provision was necessary.

The amendment was, by leave, withdrawn.

LORD MILNER OF LEEDS moved an amendment to include within the provisions of the clause requiring that new furnaces should as far as practicable be smokeless, larger furnaces of the domestic type used in large blocks of flats and hotels. He said that it was desirable that these should be brought within the clause; the most satisfactory test of the size of a furnace was its heating capacity in terms of British thermal units an hour, and he set a maximum figure of 55,000 or more in his amendment. The aim had been difficult—that of excluding furnaces of small domestic boilers for small hotels, but including the larger types of furnaces.

The EARL OF MUNSTER said that the Minister had undertaken to consider this matter after it had been discussed at length in the Commons. The amendment fulfilled the requirements and would be accepted.

The amendment was agreed to.

Another amendment, which was accepted, made clear that the clause would operate when either the furnace or the boiler, or plant containing the furnace, was installed on the site. It was pointed out that the clause was intended to apply to the installation of furnaces in buildings or, in the case of outdoor plant, on the site where the plant was intended to be used. As a general rule, the furnaces were installed *in situ*, but in some circumstances the plant might be set up on the site with the furnace already assembled, it having been "installed" earlier at the factory or the contractor's depot.

In dealing with the clause setting up the Clean Air Council, the EARL OF MUNSTER said that the Minister had considered whether the council should make an annual report to Parliament on the progress of the policies set out in the Bill and whether that report should be statutory. He had come to the conclusion that there was no necessity to make this statutory on him, for he already reported to Parliament on a variety of subjects connected with his department, such as housing, water supplies and other equally important matters. He felt that this particular matter might well be included in the report which he made to Parliament, but that he should not be under any statutory obligation to make a report, any more than he was for housing and water supplies.

OTHER BUSINESS

Disused Prefabs

MR. HUNTER asked the Minister of Works, at what price disused prefabricated houses were being sold by his department for shipment abroad.

MR. COLLINS also asked how many prefabricated houses, built since 1945, have been dismantled; how many had been sold; and, of that number, how many had been exported.

MR. BUCHAN-HEPBURN.—Up to April 30, 1956, contracts had been let for the dismantling and sale of 2,927 temporary prefabricated houses. Normally the refrigerators in these houses are disposed of separately. I understand that the purchasers have exported a considerable number of the houses, but I have no precise information on this point. Six houses have been sold direct to overseas buyers at an average price of £150, including refrigerators. In addition, 2,238 houses have been sold to local authorities as they stand.

MR. HUNTER asked the Minister if he would examine reports that middlemen had sold some of these houses to Italy, Switzerland and Holland at prices up to £1,500.

MR. BUCHAN-HEPBURN said that he would examine this matter. He had no precise information about this point. Prefabricated houses would cost more if sold abroad than if sold at home.

MR. COLLINS asked how many of these prefabricated houses were dismantled and awaiting sale.

MR. BUCHAN-HEPBURN said that he could not say how many there were at the moment. They were advertised and put out to competitive tender for sale.

MR. GIBSON asked on what grounds of policy the dismantling and selling of temporary houses was justified, in view of the enormous demand which existed for housing the people. He urged the Minister to reconsider the matter.

MR. BUCHAN-HEPBURN said that this question was governed by the Housing (Temporary Accommodation) Act, 1944, which provided that by 1954 local authorities should be entitled to have the houses removed, unless the Minister of Housing and Local Government considered that the housing conditions necessitated their retention. Questions about that Act should be addressed to Mr. Sandys: the Ministry of Works was an agent for the sales.

MR. COLLINS asked the Minister of Housing and Local Government, what advice he had given to local authorities about the re-erection, by the authority or by private persons, of dismantled prefabricated houses.

MR. ENOCH POWELL, Parliamentary Secretary, Ministry of Housing and Local Government.—The Minister has given no general advice on this subject to local authorities.

MR. COLLINS asked whether as 3,000 of the 150,000 prefabricated houses built had been dismantled and sold the Minister would see in what ways the remaining houses could be used for housing purposes if they were dismantled and erected elsewhere. Would he give some general advice or instructions to local authorities on this important matter?

MR. POWELL said that the appropriateness of doing so both from the planning and housing points of view would vary widely locally, and the initiative lay with local authorities in that matter.

Private Street Works

MR. SWINGLER asked the Minister of Housing and Local Government, what local inquiries were made by his department before he refused to sanction applications for loans for private street works.

MR. POWELL: None, unless the local authority makes a case which indicates that the street or streets in question may be dangerous to health or safety. In such cases, a visit by an engineering inspector may be arranged.

NEWS IN BRIEF

Timber-framed Houses

THE United States Bureau of Labour Statistics estimates that four out of five new American houses are of wood-frame construction. The figure is quoted in a short survey of current building just issued in America by the National Lumber Manufacturers' Association. In England, timber-framed houses have been under cost investigation by the LCC, following the Canadian tour late last year by Mr. Cleeve Barr, ARIBA, senior architect in charge of the Council's Research and Development department. Preliminary figures indicate that there would be a saving over present costs of at least £60 per house, with no diminution in standards. There would in fact be an increase in winter comfort and a saving in fuel.

New FIDOR Offices

At the third annual general meeting of FIDOR (Fibre Building Board Development Organisation, Ltd.), held at Amsterdam on May 31, Mr. E. R. T. Foad was elected chairman of the governing council, and Mr. E. P. Lawrence vice-chairman.

Summer Outing

The summer outing of the Building Teachers' Conference will take the form of a visit to Compton Wynyates in Warwickshire on Saturday, June 16. A picnic lunch at or near Compton Wynyates will precede a tour of the house and the gardens. This will be followed by tea in or near Banbury. Details from the Hon. Sec., LCC Brixton School of Building, Ferndale-road, SW4.

Hotels and Fires

The Fire Protection Association has published its bulletin for May, entitled "Fire Protection for Hotels." It shows the most common fire risks and how hotel management can guard against them. Methods of fire extinguishment and necessary precautions for the control of fire spread are recommended, together with advice on structural protection and means of escape. Copies from 15, Queen-street, EC4.

ABT Examination Results

The Association of Building Technicians has announced that the following were successful in the recent ABT clerks of works examination and gained diplomas: C. K. Austin, Bristol; R. E. Butcher, Lincoln; F. C. Evans, Dover; H. W. Harding, Cinderford; J. H. Johnson, Kinloss; H. V. Miller, Stevenage; D. D. McIntosh, Slough; J. McT. Ross, Kirkcudbright; H. Saunders, Stevenage; and J. J. Way, Liverpool.

Iron Castings Output

The United Kingdom output of iron castings, in total, for the first quarter of the year was almost exactly at the level of the previous quarter, and 2.6 per cent. above the first quarter 1955 output. The output of building and domestic grey and malleable iron castings for the first quarter was 144,180 tons, a decrease in production compared with the first quarter of 1955, when it was 151,880 tons.

Wood-cutting Edges

In choosing the species of timber to be used for a particular purpose it is often important to assess the blunting effect of the wood on the tools which are used in machining it. The Department of Scientific and Industrial Research has published Special Report Number 11 entitled "The Blunting of Wood-cutting Edges" (HMSO, price 2s.), dealing with this problem. The report describes the behaviour of wood-cutting edges with different sharpness angles and cutting angles.

Safety Tipping

The extensive and increasing practice in the cement industry of tipping raw materials, top soil and waste from vehicles at tips, has created some dangerous accident hazards. During recent years serious accidents have occurred due to vehicles being driven or turned over when near the edge of the tip. The Accident Prevention Committee of the Cement Makers' Federation has collected together examples of the methods already adopted to ensure safety precautions in tipping, and has published them in a pamphlet entitled "Safety Precautions in the Tipping of Materials." Copies (free) from the Secretary of the Federation at Terminal House, 52, Grosvenor-gardens, SW1.

Safety and Oil Burning

The Fire Offices' Committee of the Fire Protection Association have revised their recommendations for installations burning liquid fuel with a flash point not below 150 deg. F. These were first issued in 1920 and last revised in 1935. Among the subjects dealt with are the installation of storage and service tanks and of pipes and valves, the construction of flues and chimneys and the provision of safe lighting arrangements and of necessary fire extinguishing appliances. Copies (free) from The Fire Protection Association, 15, Queen-street, London, EC4.

Aluminium Bulletin

The Aluminium Development Association has published a new Information Bulletin, No. 21, "Aluminium in contact with other metals." An important section of the book describes the behaviour of aluminium in contact with specific materials which are listed under the sub-headings: iron and steel; non-ferrous metals; and non-metals. Two useful tables in this Bulletin show an approximate grouping of aluminium and its alloys for exposure in rural, industrial and marine areas; and the behaviour of couples, involving aluminium when exposed to particular environments such as marine, industrial or conditions of total immersion. The bulletin can be obtained, price 2s., from the Association at 33, Grosvenor-street, London, W1.

Builders' Foremen's Dinner

Mr. W. A. de Vigier, Chairman and Managing Director of Acrow (Engineers), Ltd., has consented to act as chairman at the annual dinner, and to sponsor the pension fund appeal of the London Association of Builders' Foremen and Clerks of Works.

PERSONAL COLUMN

E. K. Cole, Ltd., announce that MR. W. M. YORK has been elected to the board of directors. Formerly an executive director of the company, Mr. York has been appointed to the post of commercial director.

MR. EDWARD WARD joined Diesel Equipment, Ltd., of Uxbridge, Middlesex, as general manager on May 1.

SIR RICHARD POWELL, Bt., MC, has been appointed a director of Bovis, Ltd., building and civil engineering contractors, as from June 1.

NEW TOWNS CRITICISED

Mr. Lionel Brett's Views

CRITICISM of London's New Towns from an architectural point of view was voiced in Birmingham on May 29 by MR. LIONEL BRETT, ARIBA, Architect Planner of Hatfield New Town. Addressing a meeting of the Midlands New Towns Society, he said: "I think we have accepted too much the suburban way of life. What we have quite failed to do is to experiment in different kinds of living.

"We simply cannot afford in this country what you might call the Los Angeles way of life—each man with his half-acre and his sedan. I don't mean we should not have the sedan, but we simply haven't the space for the half-acre. I think that so long as people want to live in this country at all—and admittedly too many people want to live in it—it is essential that most of them should live in towns. The job of the New Towns is to show that a town is worth living in, and that is where to some extent we have failed."

MR. BROOK TAYLOR, Public Relations Officer for Hemel Hempstead New Town, said that there had been difficulty in letting flats there. "It is a fact, whether we like it or not, that the people who move to a New Town want a garden and a two-storey house," he declared.

HOUSING PROGRESS REPORT

Completions During April

THE HOUSING SUMMARY, presented to Parliament as a White Paper* jointly by the Minister of Housing and Local Government and the Secretary of State for Scotland, shows that the number of permanent houses completed in Great Britain during April was 23,101 compared with 21,496 in April, 1955.

In the first four months of 1956, 90,695 permanent houses were completed compared with 103,729 in the same period of 1955.

CRICKET

IoB Licentiate Discussion Club

ON May 26 the Institute of Builders Licentiate Discussion Club Cricket team played Scaffolding (Great Britain), Ltd., at their ground at Warlingham, Surrey. Scaffolding (GB), who were unfortunately one man short, batted first and scored 38 all out. Play continued, after tea in the new pavilion, the Licentiate Discussion Club team scoring 112 for 5 wickets.

BOOKS RECEIVED

ROMAN MORNINGS. By James Lees-Milne. (London: Alan Wingate (Publishers), Ltd.) Price 17s.

HUTCHINS' PRICED SCHEDULES. 12th Ed. Compiled by Thos. V. Hutchins. (London: G. H. Lake and Co., Ltd.) Price £3 10s. per complete set.

A GUIDE TO CURRENT PRACTICE. (London: The Institution of Heating and Ventilating Engineers.) Price 65s.

⁂ *Books reviewed in these columns may be obtained on application to the Book Dept., "The Builder," 4, Catherine-street, Aldwych, WC2. Cash (which should include 1s. to cover postage and packing) should accompany the order.*

* Cmd. 9774 Housing Summary, April 30, 1956. HM Stationery Office, price 3d.

The Builder Review of PLANT & MATERIALS

Among six new cranes introduced into the range of Steels Engineering Products, Ltd., is the S1210s, a self-propelled, full-circle-slewing, one-man-operated, fully mobile diesel/electric crane. The crane travels on four pneumatic-tyred road wheels; solid tyres are optional. The grouped finger-tip controls in the operator's cab are of the simplest kind and conveniently positioned to give fatigue-free operation over long periods, whilst the cab itself provides protection in all climates.

Rust Protection

A COATING for iron and steel which it is stated protects the metal from rust has been produced by British Bitumen Emulsions, Ltd., Dundee-road, Trading Estate, Slough, Bucks. Called "Ibetol (x)" it provides a coating of resistance to moisture, acid fumes, salt water, salt-laden atmosphere and a large number of acids. Applied by brushing or spraying, it can be used on damp or dry surfaces with equal reliability. It is stated that the material does not chip.

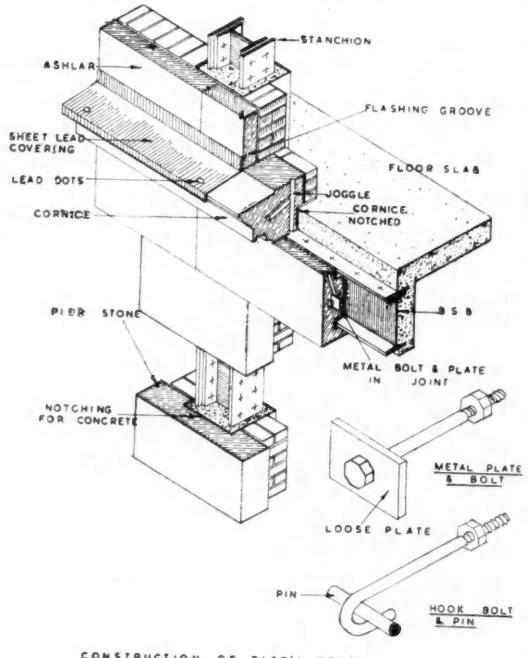
Paint and Roads

A machine by Aerostyle, Ltd., Sunbeam-road, NW10, is soon to be used in the laying of white lines on roads. It is capable of laying a straight uniform line, and the driver can see both line and road as it is being laid. A plastic paint, developed by Lewis Berger (Great Britain), Ltd., Berger House, Berkeley-square, W1, called "Cataphos" road-line paint is used in the machine. It is claimed to have good wearing qualities and quick-drying properties.

Adjustable Saw

A new saw with a blade which can be adjusted to 27 different angles in relation to the handle has been introduced by Cago Sales, Limited, 83, Lakey-lane, Hall Green, Birmingham, 28. Called the "Cago" Universal Swivelsaw, it is handy for use under a door or flush to a wall.

The covering or facing of framed structures with stonework usually entails a great deal of labour which is expensive and often wasteful. When stone facings are to be attached to structural members special thought must be given to the design of the connecting device. Typical construction of a stone fascia course and cornice over a wide opening is illustrated in the accompanying sketch. The stones are shown notched for, and resting on, a BSB and attached to the BSB by a metal plate and bolt. The back of the bottom bed of the cornice stones is shown notched to fit over, and rest on, the top surface of the structural member. This arrangement permits the superimposed load of the walling material to be thrown back on the structural member. These details are reproduced from the May issue of "Stone," a leaflet issued by the British Stone Federation.



CONSTRUCTION OF FASCIA COURSE OVER LARGE OPENING

TRADE NEWS

Change of Address

Midland Silicones, Ltd., have moved from Oldbury to larger premises at Union Chambers, 63, Temple-row, Birmingham, 2.

Telephone Number

The telephone number of Pegson, Ltd., Coalville, is now changed from Coalville 234 to Coalville 1234.

American Aggregate

Details of a scheme which aims to distribute Aglite, a load-bearing lightweight concrete aggregate, on a national basis were announced by the Butterley Company, Limited, of Derby, on May 23. The aggregate has only been available up to now in the United States.

Lighting Booklet

A pocket-size booklet has been published by Crompton Parkinson, Limited, Aldwych, WC2, giving information about the latest Crompton fluorescent and tungsten lighting fittings. It is fully illustrated and contains information as to dimensions, fixing centres, weights and polar curves.

Waterproofer for the Public

A material which has been widely used in the building industry is now being made available to the general public. Tretol Silicone Waterproofer, manufactured by Tretol, Limited, The Hyde, London, NW9, will be obtained through builders' merchants' stores.

Sliding Shutter for Shaft

Using a sliding shutter, the Mitchell Construction Co., 1, Bedford-square, WC1, recently completed the lining of the high pressure shaft serving the turbines of Ceannacroc Generating Station—part of the Glen Moriston hydro-electric scheme—for the North of Scotland Hydro-Electric Board. Ordinary Portland cement was used in the specified 1:4 mix, both the fine and coarse aggregates being crushed granite.

Site Service

A service of use to architects and contractors has been introduced by Celotex, Ltd., North Circular-road, NW10. When the firm's products are specified a form is completed and returned to their office. The technical department then check the proposed application and if necessary make further suggestions to ensure economical and correct fixings. A representative of the firm regularly visits the site to maintain liaison until the completion of the job.

Display of Roofing Felts

A two-tiered display showing their comprehensive range of roofing and slaters' felts will form the central feature of the stand of the Ruberoid Co., Ltd., 1-19, New Oxford-street, London, WC1, at the Royal Welsh Show, to be held from July 25 to 27 at Rhyl. A model roof will show the correct method of laying Ruberoid with a lap joint made water-tight by the use of special cement, and various specifications will be shown by the company of lightweight deckings designed to cover buildings of all sizes. In addition, a variety of bituminous paints will be on view; these being suitable for the preservation of bituminous roofs, woodwork or metal.

The Builder

CURRENT PRICES OF MATERIALS

THE information given on these pages has been specially compiled for *The Builder* and is copyright. It is the intention that the details given should indicate fair average prices of materials, not necessarily the highest or the lowest. The prices apply to large quantities of materials loaded at works, delivered at London Stations or at site in London Area as stated. Prices for smaller quantities ex merchant's warehouse will necessarily be higher so as to include the stocking and handling costs involved. Due to the exceptional circumstances now prevailing it is recommended that the prices of materials should be confirmed by inquiry from suppliers and merchants.

AGGREGATES AND SAND

Delivered site in full lorry loads. Average of prices for Boroughs of Westminster, Paddington, Holborn and St. Pancras.

		£	s.	d.
Pit Ballast	per yd.	1	6	0
Pit Sand	„	1	3	5
Washed Sand	„	1	6	7
¾ in. Shingle	„	1	2	11
¼ in. Broken Brick	„	1	0	6
Pan Breeze	„		10	9
Fine or Coarse Foamed Slag Aggregate 2 yds. of fine and 2.6 yds. of coarse per ton.	per ton	3	0	9

CEMENT, etc.

Including non-returnable jute sacks or paper bags.

		£	s.	d.
Best British Portland Cement. Standard Specification delivered Charing Cross area. 6-ton loads and upwards, site	per ton	5	1	6
1 to 6 tons, site	„	5	13	6
Rapid Hardening Cement in 6-ton loads and upwards to site	„	5	12	0
1 to 6 tons do. site	„	6	4	0
Aquacrete Water Repellent Cement. 32s. 6d. per ton on ordinary cement prices.				
Red, Buff or Khaki Colorcrete in 6-ton lots	„	7	18	0
Other colours according to colour.				
In 4-ton lots from 295s. 0d. to 685s. 0d. per ton.				
White Portland Cement	„	13	2	0
Under 1 ton	per cwt.		15	7
417 Cement (Ultra Rapid Hardening) in 6-ton lots and upwards	per ton	6	14	0
Super Cement (Waterproof), 32s. 6d. per ton above Portland Cement.				
Cullamix Tyrolean Finish, £11 5s. 0d. to £14 0s. 0d. (1-ton loads and upwards).				
Lightning and Ciment Fondu Brands High Aluminous cement, 6-ton lots and up	„	14	8	3
Stourbridge Fireclay, 6-ton loads at Railway Depot, London	„	6	12	9
Moler Mortar Powder for Flue Bricks (London sites)	per cwt.	1	10	0

BRICKS

Full Loads.

		£	s.	d.
First Hard Stocks	per 1,000	11	17	0
Second Hard Stocks	„	10	16	0
Mild Stocks (Kiln Burnt)	„	9	1	6
Mild Stocks	„	8	16	6
All loaded free into lorry at the works. The question of haulage is still very difficult and prices must be obtained from job to job.				
2½ in. Nominal Fletton Bricks to sites in W.C. District Commons	„	5	13	0
Cellular do.	„	5	13	0
Keyed do.	„	5	15	0
Rustics	„	6	18	0
Cellular Rustics	„	6	18	0
Single Bullnose Commons	„	6	13	0
Sandfaced	„	7	13	0
Tuscans	„	8	8	0
Saxons	„	8	16	0
Golden Buffs	„	9	3	0
Best Blue Pressed Staffs (London Stations)	„	27	5	6
Do. Bullnose (London Stations)	„	27	19	6
Blue Wire Cuts (London Stations)	„	24	14	0
Midhurst Lime Bricks (London sites)	„	10	8	0
Uxbridge Whites (London sites)	„	9	17	0
Special Purpose Sandlime Bricks (London sites)	„	7	14	0
2½ in. Best Stourbridge Fire Bricks (London stations)	„	27	16	3
3 in. do. (London stations)	„	33	8	0
2½ in. Moler Flue Bricks (London sites)	„	36	0	0
2½ in. Machine-made Sandfaced Red Facings (London sites)	„	14	8	6
2½ in. Machine-made Multi Red Facings (London sites)	„	14	13	6
2½ in. Hand-made Sandfaced Red Facings (London sites)	„	15	6	0
2½ in. Hand-made Sandfaced Multi-Colour Facings (London sites)	„	16	1	0
Hand-made Sandfaced Cherry Red Facings. Berkshire district (London sites)	per 1,000	17	11	3
Hand-made Sandfaced Multi-Colour Facings. Berkshire district (London sites)	„	17	6	3
Rubber Bricks for gauged arches (London sites)	„	41	10	0
2⅝ in. Surrey Clamp Burnt Multi Stock Facings (London sites)	„	13	6	0
2⅝ in. Surrey Kiln Burnt Multi Stock Facings (London sites)	„	14	18	0
Glazed Bricks (London sites), White, Ivory, Brown—				
Stretchers	„	64	0	0
Headers	„	63	0	0
Quoins, Bullnose and 4½ in. Flats	„	80	0	0
Double Stretchers	„	85	0	0
Double Headers	„	77	10	0
One side and two ends	„	87	0	0
Two sides and one end	„	89	10	0
Splays and Squints	„	83	0	0

Cream and Buff £3 extra over White. Other colours, hard glaze, £8 10s. 0d. extra over White. All above prices plus 25% for Best quality and plus 25% less 10% for Second quality.

PARTITION SLABS, etc.

Delivered Central London Area. (W.C. District).

	Minimum lorry loads.		£	s.	d.
HOLLOW CLAY PARTITION BLOCKS (Keyed)					
*2 in.	140 yds.	per yd. sup.		4	4
*2½ in.	140 yds.	„		4	7
*3 in. (3 cavity)	120 yds.	„		5	4
BUILDING BLOCKS (Keyed)					
*3 in. (6 cavity)	110 yds.	„		5	6
*4 in. (6 cavity)	95 yds.	„		6	9
6 in. (8½ in. × 5⅝ in.)...	1,250 blocks	per 1,000	26	6	0
* Half blocks at no extra charge.					
CLINKER CONCRETE					
2 in.	100 yds.	per yd. sup		3	9
2½ in.	85 yds.	„		4	4
3 in.	75 yds.	„		5	3
4 in.	55 yds.	„		6	5
CRANHAM					
2 in.		„		6	8
2½ in.		„		7	4
3 in.		„		8	7
4 in.		„		10	7
4½ in. Load bearing quality		„		11	8
MOLER PARTITION BLOCKS					
2 in.	150 yds.	„		15	6
2½ in.	120 yds.	„		15	9
3 in.	100 yds.	„		16	0
4 in.	90 yds.	„		19	0
LIGHTWEIGHT CONCRETE BUILDING AND PARTITION BLOCKS OF VARIOUS SOURCES OF MANUFACTURE					
2 in.	100 yds.	„		5	9
2½ in.	80 yds.	„		6	11
3 in.	65 yds.	„		8	1
4 in.	50 yds.	„		9	6
4½ in.	44 yds.	„		10	2
6 in.	33 yds.	„		13	8
THERMALITE-YTONG PARTITION BLOCKS					
2½ in.	120 yds.	„		6	11
THERMALITE-YTONG LOADBEARING INSULATING BLOCKS					
3 in.	100 yds.	„		8	3½
4 in.	75 yds.	„		10	9
5 in.	60 yds.	„		13	5
6 in.	50 yds.	„		16	1½
8½ in.	35 yds.	„	1	3	0½
FLOOR BLOCKS AND FILLER TILES					
3 in. Floor Blocks 12 in. by 12 in. delivered in full lorry-loads		per 1,000	33	6	0
4 in. do.		„	35	14	0
5 in. do.		„	42	10	0
6 in. do.		„	47	17	0
7 in. do.		„	58	8	0
8 in. do.		„	68	9	0
10″ × 3″ × ⅝″ Filler Tiles in multiples of 10 tiles	per 1,000 multiples		56	15	0
12″ × 3″ × ⅝″ do.	do.	„	64	10	0
10″ × 4″ × ⅝″ do.	do.	„	71	0	0

STONEWARE DRAIN PIPES, etc.

The following are the percentages to be added to the Standard List prices delivered London Area.

Delivered ex Merchants Wharf or Depot or Manufacturers Works.

	Over 2 tons	Over 100 pieces Under 100 pieces Under 2 tons	Under 2 tons
Best Quality	+85%	+117½%	+130%
BSS Best do.	+10% +85%	+10% +117½%	+10% +130%
Tested Quality	+37½% +85%	+37½% +117½%	+37½% +130%
BSS Tested do.	+47½% +85%	+47½% +117½%	+47½% +130%

STONEWARE DRAIN PIPES, etc.—*continued*

	£	s.	d.
3 in. Land Drain Pipes (in 12 in. lengths) ... per 1,000	11	0	6
4 in. do. ... ... ,,	14	9	6
6 in. do. ... ... ,,	29	19	0
9 in. do. ... ... ,,	57	5	0

DAMP COURSE

Hessian base bitumen 7 lb. per yd. sup. in 24 ft. rolls cut to wall widths in lots of £6 value and over delivered London area ... ... per yd. sup.	3		3½
Asbestos base ditto 7 lb. per yd. sup. do. do. ,,	5		2
Lead lined bitumen ditto 9½ lb. per yd. sup. do. ,,	12		2
18 in. × 9 in. British damp course slates ... ... per 1,000	41	12	8
14 in. × 9 in. do. do. ... ... ,,	32	0	0
9 in. × 9 in. do. do. ... ... ,,	18	2	6
18 in. × 4½ in. do. do. ... ... ,,	19	2	6
14 in. × 4½ in. do. do. ... ... ,,	15	4	9
9 in. × 4½ in. do. do. ... ... ,,	10	5	3

STONE

Bath Stone—			
Monks Park ... ... per ft. cube	8		1½
St. Aldhelm Box Ground ... ... ,,	9		1½
Delivered in railway trucks at South Lambeth B.R. Western Region.			
Doulting Stone Random Blocks. Delivered London area ,,	8	11	
Beer Stone. Delivered London area ... ... ,,	8	5	
Portland Stone—			
Brown Whitbed in random blocks, 20 ft. average delivered in railway trucks at Nine Elms, B.R. Southern Region ... ... ,,	8	5	
Yorkshire Stone—Blue Robin Hood Quality. Delivered to site London in 6-ton lots.			
9 in. × 3 in. Rubbed, weathered, throated and stooled cills ... ... per ft. cube	3	17	9
12 in. × 6 in. do. do. ... ... ,,	2	15	6
12 in. × 3 in. Plain coping, twice throated ... ,,	2	3	0
12 in. × 3 in. Weathered and twice throated coping ,,	2	17	3
14 in. × 6 in. do. do. ... ... ,,	2	11	9
4½ in. × 9 in. Plinth, rubbed on top and face ... ,,	2	6	3
3 in. sawn two sides Slabs, random sizes ... ... per ft. sup.		8	3
Templates and Cover Stones, 3 in., 4 in. and 6 in. thick, edges coped for rendered brickwork ... per ft. cube	1	8	3
Do. do. fair one edge for fair faced brickwork ... ... ,,	1	13	6
Hard York—			
12 in. × 2 in. Square Steps, rubbed on top and edge per ft. run		10	0
14 in. × 3 in. Round-nosed Steps, rubbed on top and front ... ... per ft. cube	2	12	9
12 in. × 6 in. Plain Steps, rubbed top and front ... ,,	2	6	3
2 in. Rubbed and Jointed Paving, given sizes ... per ft. sup.		9	4
2 in. Sawn Paving, edges squared, in random sizes per yd. sup.	3	5	3

TILES AND PANTILES

Delivered London area by road in 6 tons or over per 1,000			
Machine-made Pantiles and French pattern Tiles from Lincolnshire district	29	8	0
Hand-made Pantiles Berkshire district	50	9	0
Hand-made Double Roman Bridgwater district	58	13	6
Hand-made 10½ × 6½ tiles Berkshire district	14	1	6
Machine-made 10½ × 6½ Staffordshire district	13	18	9
Hand-made Hip and Valley tiles per doz.	1	10	0
Machine-made Hip and Valley tiles do.	1	8	0
Concrete tiles 10½ × 6½	8	1	6
do. Interlocking (49S)	19	0	0

NOTE.—Breakage in transit, purchasers' responsibility.

SLATES

First-quality Slates from Penrhyn or Portmadoc, carriage paid in full truck loads to London Rate Station. Per 1,000 actual.			
24 × 12	137	2	4
22 × 12	111	8	0
22 × 11	100	14	1
20 × 12	94	9	10
20 × 10	90	8	6
18 × 10	62	17	0
18 × 9	55	1	6
16 × 10	49	10	0
16 × 8	38	15	3

NOTE.—Breakage in transit, purchasers' responsibility.

TIMBER

Softwood—					
Joinery quality	Ex. Wharf	per standard	£115 to £140		
Carcassing quality	do.	,,	£100 to £105		
1 in. Tongued and Grooved Flooring	do.	,,	£110	0	0
Hardwood—					
Mahogany—African S.E. ...	do.	per ft. cube	1	10	0
do. Honduras do. ...	do.	,,	3	5	0
Oak European do. ...	do.	,,	2	5	0
do. Japanese do. ...	do.	,,	2	10	0
do. English Logs sawn ...	do.	,,	1	17	6
Teak 8 in. average S.E. ...	do.	,,	3	17	6
Walnut African Logs sawn ...	do.	,,	1	5	0

DOORS (in Lots 1-11)

	£	s.	d.
Delivered London area.			
1½ in. 4 Horizontal Panel. Pattern 4 in. deal			
2ft. 0 in. × 6 ft. 6 in. ... ... each	1	12	
2 ft. 3 in. × 6 ft. 6 in. ... ... ,,	1	13	
2 ft. 6 in. × 6 ft. 6 in. ... ... ,,	1	14	
2 ft. 9 in. × 6 ft. 6 in. ... ... ,,	1	16	
2 in. do. but top panel open. Pattern 4 × G in deal			
2 ft. 6 in. × 6 ft. 6 in. ... ... ,,	2	9	
2 ft. 9 in. × 6 ft. 6 in. ... ... ,,	2	11	
2 in. Panel, top panel open. Pattern 2 × G in deal			
2 ft. 6 in. × 6 ft. 6 in. ... ... ,,	2	1	
2 ft. 9 in. × 6 ft. 6 in. ... ... ,,	2	3	

SUNDRIES

Delivered London area.			
1 in. Wood Wool Slabs, 6 ft. 0 in. × 2 ft. 0 in. in quantities of 1 ton (89 yds. to 1 ton) ... ... per yd.	5		
1½ in. do. (67 yds. to 1 ton) ... ... ,,	7		
2 in. do. (52 yds. to 1 ton) ... ... ,,	8		
2½ in. do. (45 yds. to 1 ton) ... ... ,,	10		
3 in. do. (39 yds. to 1 ton) ... ... ,,	11		
Quantities under 1 ton add 1d. per ½ in. of thickness.			
½ in. imported insulation Board, quantities over 5,000 sq. ft. per 100 sq. ft.	2	2	
⅛ in. Hardboard do. ... ... ,,	2	1	
3/16 in. do. do. ... ... ,,	3	2	
3/16 in. Asbestos Flat Building Sheets ... ... per yd. sup.		3	
¼ in. do. ... ... ,,		4	
Roofing Felt, 1-ply ... ... ,,		1	
do. 2-ply ... ... ,,		2	
Best Scotch Glue in slabs ... ... per ½ cwt.	5	0	
do. pearl ... ... ,,	5	5	
Croid Glue ... ... 28 lb.	2	6	
Cut Nails 3 in. (1-ton lots) ... ... per ton	66	10	
do. 4 in. and up (1-ton lots) ... ... ,,	63	0	
Wire Nails, 3 in. (4-cwt. lots) ... ... per cwt.	3	0	
do. 4 in. and up (4-cwt. lots) ... ... ,,	3	0	

METALS

STEEL JOISTS, ETC.

Basis Joists—			
6 in. × 5 in., 8 in. × 5 in., 8 in. × 6 in., 10 in. × 6 in. 12 in. × 6 in. plain cut to lengths delivered London area ... ... per ton	44	5	0
Extra for sizes			
3 in. × 1½ in. 4 in. × 1¾ in. ... ... ,,	3	10	0
3 in. × 3 in. ... ... ,,	2	10	9
4 in. × 3 in. 10 in. × 4½ in. ... ... ,,	1	10	0
5 in. × 2½ in. 5 in. × 3 in. ... ... ,,	1	15	0
4¾ in. × 1⅞ in. ... ... ,,	3	5	0
5 in. × 4½ in. 7 in. × 3½ in. 13 in. × 5 in. ,,		15	0
6 in. × 3 in. 24 in. × 7⅛ in. ... ... ,,	2	0	0
6 in. × 4½ in. 7 in. × 4 in. 8 in. × 4 in. } ,,	1	5	0
9 in. × 4 in. 10 in. × 5 in. ... ... }			
12 in. × 5 in. 22 in. × 7 in. ... ... ,,	1	0	0
9 in. × 7 in. 10 in. × 8 in. 12 in. × 8 in. }			
14 in. × 5½ in. 14 in. × 6 in. 14 in. × 8 in. }			
15 in. × 5 in. 15 in. × 6 in. 16 in. × 6 in. } ,,		10	0
16 in. × 8 in. 18 in. × 6 in. 18 in. × 7 in. }			
18 in. × 8 in. 20 in. × 6½ in. 20 in. × 7½ in. }			
Steel angles average price ... ... ,,	46	5	0
Steel tees average price ... ... ,,	47	5	0
Fabricated work delivered London—			
R.S. Joists cut and fitted ... ... ,,	61	7	6
Compound girders ... ... ,,	67	10	0
Stanchions ... ... ,,	72	17	6
Compound stanchions ... ... ,,	77	5	0
In Roof Work—Trusses and Purlins ... ... ,,	90	10	0
Average prices not for awkward work.			
Angle cleats and ⅝ in., ¾ in. and ⅞ in. bolts average price London area ... ... per cwt.	5	3	0

FERRO-CONCRETE BARS

Mild Steel Ferro-Concrete bars British manufacture to BSS785 ex London Stock ⅝ in. diam., and upwards ... ... ,,	44	10	0
¼ in. diam. ... ...per ton extra	8	12	0
5/16 in. do. ... ... ,,	6	12	0
⅜ in. do. ... ... ,,	4	12	0
½ in. do. ... ... ,,	3	2	0

MILD STEEL TUBES

Tubes to BSS1387 and Fittings. List prices and following discounts:

Galvanised Tube—	W.I. Fittings.	Malleable Fittings
Class A + 11¼%		
Class B + 22½%	Light + 38¾%	Malleable List −28¼% + 40%
Class C + 40½%	Heavy + 46¼%	
Black—		
Class A − 11¼%		
Class B + 5%	Light + 55½%	Malleable List—28¼%
Class C + 15 %	Heavy + 33 %	

C.I. HALF-ROUND GUTTERS

Delivered London per yd. in 6-ft. lengths

	Gutters	Nozzles	Stop Ends
3 in.	3/7½	3/3	/11
3½ in.	4/1½	3/6	/11
4 in.	5/1	3/11	1/5
4½ in.	5/7	4/5	1/8
5 in.	6/3	4/9	1/11

METALS—*continued*

C.I.O.G. Gutters

	Gutters	Nozzle	Stop Ends
3 in.	4/8	4/3	1/1
3½ in.	5/2½	4/3	1/5
4 in.	5/9½	4/5	1/8
4½ in.	6/3	5/1	1/11
5 in.	6/10	5/9	2/2

C.I. Rain-water Pipes

Per yd. in 6-ft. lengths	Pipe	Bends	Branches
2 in.	7/9	3/11	5/8
2½ in.	7/9	4/5	7/7
3 in.	8/8½	5/6	8/3
3½ in.	9/11	6/6	9/11
4 in.	11/5½	7/11	11/9

L.C.C. Coated Soil Pipes

2 in.	8/9½	6/10	8/3
2½ in.	9/3	7/6	10/3
3 in.	10/5	8/3	12/2
3½ in.	11/7½	10/3	14/3
4 in.	13/3	11/6	16/9

Above prices for gutters, rain-water and soil pipes for under 5 cwt. lots only. Lots over 5 cwt. see List No. 3300 dated February 1, 1955, plus 12½% and tonnage allowance. 4-ton lots 5 per cent., 2-ton lots 2½ per cent.

L.C.C. Coated Drain Pipes

	In 9-fts. cwt. qr. lb.	per yd.	Bends	Branches
4 in.	1 1 17	30/6	21/3	37/6
6 in.	2 0 1	45/–	56/6	90/9

Asbestos Rain-water Pipes and Fittings

All less 17½ per cent. discount.

		2 in.	2½ in.	3 in.	4 in.
Pipes 6-ft. lengths	per yd.	3/11½	4/3	5/1½	6/9½
Shoes	each	2/7	2/10	3/4	4/6
Single Branches	„	4/–	4/9	5/8	7/11
Bends square or obtuse	„	2/10	3/1	4/–	5/8
Swan Necks 4½ in. proj.	„	3/1	4/–	4/6	6/3
do. 6 in. do.	„	3/4	4/–	5/1	6/9

Asbestos O.G. Gutters and Fittings

		4 in.	4½ in.	5 in.	6 in.
Gutters 6 ft. lengths	per yd.	3/8½	4/2	4/11½	5/11½
Drop ends	each	3/–	3/6	4/1	4/10
Stop ends	„	–/11	1/–	1/1	1/3
Angles	„	3/1	3/7	4/4	5/1
Nozzles	„	3/–	3/6	4/1	4/10
Union Clips	„	1/6	1/9	2/2	2/6

Asbestos Half-Round Gutters and Fittings

		3 in.	4 in.	4½ in.	5 in.	6 in.
Gutters 6 ft. lengths	per yd.	2/7½	3/1½	3/2½	3/9½	5/3½
Drop ends	each	2/2	2/7	2/10	3/1	4/6
Stop ends	„	–/10	/11	1/–	1/1	1/3
Angles	„	2/6	2/10	3/1	3/4	4/6
Nozzles	„	2/2	2/7	2/10	3/1	4/6
Union Clips	„	1/1	1/2	1/3	1/5	2/1

	Per ton basis in London £ s. d.
Iron—Staffordshire Crown Merchant Quality	43 12 6
Mild Steel Bars	46 18 0
Mild Steel Hoops	42 17 6

	Ex Merchant's Stock per ton Two-ton lots £ s. d.
Soft Sheets C.R. and C.A.—	
20 gauge	56 2 6
24 gauge	58 12 6
26 gauge	61 12 6
Galvanised Corrugated sheets 6 ft. to 9 ft.—	
20 gauge	64 7 0
24 gauge	67 17 0
26 gauge	73 2 0
Galvanised flat sheets C.R. and C.A.—	
20 gauge	65 7 0
24 gauge	68 17 0
26 gauge	74 12 0

ALUMINIUM AND ALUMINIUM ALLOYS

(Base prices)	£ s. d.
Sheet BS 1470 SIC 18 SWG (36 in. wide)] per lb.	2 9½
Sheet BS 1470 NS3 Utility 18 SWG (36 in. wide) „	2 7
Coiled strip BS 1470 S1C 18 SWG (24 in. wide) „	2 8½
Coiled strip BS 1470 NS 3 Utility 18 SWG (24 in. wide) „	2 6½
Coiled strip for flashing 99.7% purity 22 SWG (12 in. wide) „	2 11
Corrugated sheet BS 1470 NS 3 Utility Circular Profile 8 ft. × 32 in. × 20 SWG per sheet	1 11 0
Corrugated sheet BS 1470 NS 3 Utility Industrial Profile 8 ft. × 31½ in. × 20 SWG „	1 16 9
Corrugated sheet BS 1470 NS 3 Utility Mansard Profile 8 ft. × 31½ in. × 20 SWG „	1 10 2
Extruded section BS 1476 E1C simple moulding per lb.	2 7½
Extruded section BS 1476 E1C 1 in. diam. round „	2 5
Extruded section BS 1476 HE1WP simple angle „	2 10½
Extruded section BS 1476 HE10WP 1 in. diam. round „	2 9½
Tubing BS 1471 T1C 1½ in. O/D × 20 SWG „	4 2½
Tubing BS 1471 HT10WP 1½ in. O/D × 20 SWG „	5 5½

PLUMBERS' BRASS WORK, etc.

Delivered in London area.

All per doz.	M.O.H. ½ in.	¾ in.	1 in.	1¼ in.	1½ in.	2 in.
Screwdown bib cocks Crutch head for iron	87/–	128/8				
Toilet bib cocks for iron	109/–	158/5				
Screwdown stop cocks for iron	66/–	95/9	188/–	363/–	522/6	917/6
do. with two unions for lead	89/–	132/–	234/4	472/–	623/6	1389/6
Double nut boiler screws	18/8	26/5	47/6	48/6	67/–	93/6
Heavy Croydon ball valves	77/–	193/6	312/5	568/8	734/10	—

	1¼ in.	1½ in.	2 in.	3 in.	3½ in.	4 in.
Plumbers' union brass lead to iron	19/6	23/6	38/6	52/10	70/6	165/–
Caps and screws	33/–	40/8	59/6	92/5	118/10	155/3
Brass sleeves			31/11	31/11	56/2	74/10	91/5

	1½ × 6 lb.	1½ × 6 lb.	2 × 7 lb.	3 × 7 lb.
Lead P. trap with brass cleaning screws	70/9	88/6	141/7	241/11
Lead S. trap do.	85/6	106/3	174/–	312/8

Solder	s. d. per lb.
Plumbers'	4 1
Tinmen's	4 11
Blow pipe	5 0

Copper Tubes and Sheets

Copper tubes BSS 659/1944 on the basic price of 34½d. per lb. plus gauge and manufacturing extras as follows. Minimum quantities, 3 cwt.

	Extra d.	Total per lb. d.	approx. per ft. d.
⅛ in. × 19 gauge	13½	48½	13
¼ in. × 19 „	11½	46½	18½
1 in. × 18 „	10½	45½	28
1¼ in. × 18 „	9½	44½	33½
1½ in. × 18 „	9½	44½	40½
2 in. × 17 „	11½	46½	64½

Rolled Copper sheets up to 48 in. wide, basic price plus gauge and manufacturing extras ... per ton 385 5 0

Zinc

Sheet Zinc		£ s. d. per cwt.
	10 gauge (25 SWG) 5 cwt. lots upwards	8 10 9
do.	12 gauge (23 SWG) „	8 8 3
do.	14 gauge (21 SWG) „	8 7 0

Brass Tubes

Brass tubes basic price, plus gauge and manufacturing extras ... per lb. 2 4½

LEAD SHEET AND PIPES

Basis selling price in minimum one-ton delivery to one address in London or Home Counties.

	£ s. d.
Lead Sheet, English, 3½ lb. substance and upwards per ton	149 15 0
Lead Water Pipe in coils „	151 0 0
Lead Soil Pipe 10 ft. or over 2 in. to 4 in. dia. „	152 10 0
„ over 4 in. dia. „	154 10 0
Lead Gas or Untinned Compo pipe „	152 10 0
Extras over Basis for quantities under 1 ton	
5 cwt. and under 1 ton per cwt.	2 0
3 cwt. do. 5 cwt. „	4 0
1 cwt. do. 3 cwt. „	6 0

Smaller quantities than 1 cwt. priced specially.

Supplying sheet lead and lead pipe to less than basis weights and cutting to sizes less than basis charged extra according to current trade schedule.

Allowance for Old Lead, collected £100 0s. 0d. per ton weighed at buyer's works.

PLASTER, etc.

	£ s. d.
Coarse Pink in 1-ton loads and over Delivered on Site per ton	7 11 9
do. White do. do. „	7 19 6
Sirapite Coarse do. do. „	7 14 0
do. Fine do. do. „	8 2 0
Blue Lias Lime in 6-ton loads „	6 14 6
Hydrated Lime do. „	5 17 6
Lump Lime do. „	5 7 0
White Keen's or Parian Cement in 1-ton loads „	10 17 0
Pink Keen's or Parian Cement in 1-ton loads „	10 11 9
Granite Chips in 6-ton loads „	2 9 4
Hair per cwt.	4 17 9
Gypsum Plaster Lath or Base Board ⅜ in. thick 600 yds. and over in one delivery. Delivered site per yd.	2 3½
1,200 yds. „	2 2½
Do. Insulating do. ⅜ in. thick 600 yds. and over in one delivery. Delivered site „	2 11½
1,200 yds. „	2 10½
Gypsum Plaster Wall Boards, 3 and 4 ft. wide, 6 to 12 ft., ⅜ in. thick, 600 yds. and over in one delivery. Delivered site „	2 6½
1,200 yds. „	2 5½
Do. Insulating do. ⅜ in. thick 600 yds. and over in one delivery. Delivered site „	3 2½
1,200 yds. „	3 1½

PAINT AND DISTEMPER

	£ s. d.	
Delivered London area		
Ceiling Distemper	1 7 6	per cwt.
Washable Distemper	5 5 0	„
Gloss Paint	2 10 0	per gal.
Snowcem cement paint (in 1 cwt. drums)	3 11 0	per cwt.
LEAD PRODUCTS AND OILS		
Ground White Lead, 1 cwt. kegs	9 18 0	per cwt.
Genuine White Lead Paint, 1-19gal. lots in 1 gal. tins	3 12 0	per gal.
Genuine Red Lead, Dry, 1 cwt. keg	7 5 0	per cwt.
Genuine Linseed Oil Putty, 1 cwt. keg	2 18 0	„
Size XD quality, 28 lb.	9 0	per tin
Raw Linseed Oil (5 gal.) drums extra	17 3	per gal.
Boiled Linseed Oil (5 gal.) do.	17 9	„
SUNDRIES.		
Turpentine substitute (5 gal.) drums extra	5 6½	„
do. do. (40 gal.) do. do. ...	4 8½	„
Solignum, Brown (5 gal. cans) Exterior	7 4	„
Creosote (40 gal. barrels)	2 0	„
Paste Powder (1 lb. packets)	2 0	per lb.
White Lining Paper	1 1	per piece

VARNISHES, etc.

Delivered London area		
Oak Varnish, Outside or Inside	1 18 0	per gal.
Oak Pale Copal do.	1 18 0	„
Hard Drying Oak for Inside	2 1 0	„
Crystal Paper Varnish do.	2 4 0	„
Eggshell Flat Varnish do.	2 6 0	„
Finest Carriage Varnish	2 5 0	„
Front Door Varnish	2 1 0	„
Japan Gold Size	1 14 0	„
Black Japan	1 15 0	„
Brunswick Black	1 10 0	„
Berlin Black	1 7 6	„
Terebene	1 13 0	„
Knotting (1 gal. bottles free)...	2 7 0	„
French and Brush Polish (do.)	2 0 0	„

GLASS

	per ft. super s. d.
Delivered London area	
18 oz. Sheet Glass Ordinary Glazing Quality. Cut Sizes	6½
24 oz. „ „ „ „ „ „	8¼
26 oz. „ „ „ „ „ „	11
32 oz. „ „ „ „ „ „	1 2⅜
¼ in. Rolled Plate	10
⅜ in. and ½ in. Rough Cast	1 1

	Per ft. super s. d.
⅛ in. Figured Rolled and Cathedral, Standard patterns: White	10
do. Standard Tints	1 5½
do. Special Tints	2 11½
⅛ in. Pinstripe, Hammerstripe, Reeded, Reedlyte and Luminating	1 2
¼ in. Wired Cast	1 3½
½ in. Georgian Wired Cast	1 5½
Hollow Glass Blocks—	Each
P.B.2. 5¾ × 5¾ × 3⅞ in.	2 11
P.B.3 7¾ × 7¾ × 3⅞ in.	4 5
P.B.32 7¾ × 7¾ × 3⅝ in.	4 5
Radiused Corner Blocks to match up with—	
P.B.2	5 6
P.B.3	7 0
P.B.32	7 0
¼ in. Polished Plate Glass, G.G. Quality—	Per ft. super
In plates not exceeding 2 ft. sup.	3 7
„ „ „ 5 ft. sup.	4 5
„ „ „ 45 ft. sup.	5 1
„ „ „ 100 ft. sup.	5 6
¼ in. Polished Plate, extra sizes, *i.e.*, plates exceeding 100 ft. sup. or 160 in. one way or 96 in. both ways. G.G. quality —Not exceeding 135 ft. sup. or 250 in. one way or 135 in. both ways	8 4
Not exceeding 180 ft. sup. or ditto	11 3
Not exceeding 200 ft. sup. or ditto	16 0
Plates exceeding 200 ft. sup. prices on application.	
Substances other than ¼ in. Polished Plate at Special Prices.	

Quantity Tariff—Sheet and Sundry Glass.

The following prices apply to minimum quantities of one size and one pattern delivered by the manufacturer to one site at one time.

Description of Glass	Minimum quantity	Per ft. sup. s. d.
18 oz. sheet O.Q.	3,000	4⅞
24 oz. „ „	2,000	6½
26 oz. „ „	2,000	8¼
32 oz. „ „	2,000	11⅛
⅛ in. Rolled Plate	1,000	8
⅛ in. Figured Rolled and Cathedral Standard Patterns, White	1,000	8
⅛ in. Pinstripe, Hammerstripe, Reeded, Luminating and Spotlyte...	1,000	11
3/16 in. and ¼ in. Rolled Plate or Rough Cast ...	2,000	11
¼ in Wired Cast, Hexagonal...	2,000	1 0¼
¼ in. Georgian Wired Cast	2,000	1 1

The Builder

CURRENT RATES OF WAGES

AS FROM APRIL 16, 1956. (Every endeavour is made to ensure accuracy but we cannot be responsible for errors.)

KEY TO SCHEDULE OF GRADE RATES.

Grade Classification.	A	A1	A2
Craftsmen	4/3½	4/3	4/2½
Labourers	3/9	3/8½	3/8

Town.	*Grade.*
Aberavon	A
Aberdare	A
Abergavenny	A
Abingdon	A2
Accrington	A
Addlestone	A
Afan Valley	A
Aldeburgh	A1
Aldershot District	A1
Alfreton UD	A
Alnwick UD	A
Altrincham	A
Amble	A
Ambleside	A2
Amersham	A1
Ammanford	A
Andover	A2
Anglesey, Isle of	A2
Ardingly	A2
Arundel	A2
Ascot	A2
Ashbourne RD	A2
Ashbourne UD	A2
Ashby-de-la-Zouch UD	A
Ashby Woulds UD	A
Ashford (Kent)	A2
Ashford (Middlesex)	A
Ashington UD	A
Ashtead	A
Ashton-under-Lyne	A
Aspatria and Brayton	A2
Atherstone RD	A
Attleborough	A2
Axminster	A2
Aylesbury	A2
Aylesham	A2
Bagshot	A2
Bakewell UD	A2
Banbury	A1
Bangor	A2
Barnard Castle UD	A
Barnoldswick UD	A
Barnsley CB	A
Barnstaple	A2
Barrow-in-Furness	A
Barrow-upon-Soar RD (exc. Thrussington A2)	A
Barry	A
Basford RD (exc. Willough-by-on-the-Wolds A1)	A
Basingstoke	A1
Bath	A
Batley MB	A
Baxterley	A1
Beaconsfield District	A
Bearl	A
Beccles	A2
Bedale RD	A
Bedford	A
Bedlington	A
Bedlingtonshire UD	A
Bedwas	A
Beeston & Stapleford UD	A
Belper UD	A
Belton	A
Berkhamsted	A
Berrington	A1
Berwick Borough	A
Beverley MB	A
Bewdley MB	A
Bexhill-on-Sea	A2
Bideford	A2
Biggleswade	A2
Billericay	A
Billing	A
Billingham UD	A
Bilsthorpe	A
Bilston MB	A
Birchington	A2
Birkenhead	*
Birmingham CB	†A
Bishop Auckland UD	A
Bishop's Stortford	A
Bishops Castle MB	A2
Bispham	A
Blackburn	A
Blackpool	A
Blackwell RD	A
Blandford	A2
Blaydon UD	A
Blidworth	A
Blyth B.	A
Bodmin	A2
Bognor Regis	A2
Boldon UD	A
Bolsover UD	A
Bolton	A
Boston MB	A
Bourne End	A
Bournemouth District	A
Brackley MB	A2
Bracknell	A2
Bradford CB	A
Bradford-on-Avon	A2
Braintree	A1
Brandon & Byshottles UD	A
Brecon—Borough of	A1
Breconshire, County of	‡A2
Brent Knoll	A2
Brentwood	A
Bridgend	A
Bridlington MB	A
Bridlington RD	A1
Bridgnorth MB	A1
Bridgnorth RD	A2
Bridgwater	A1
Brierfield	A
Brighouse MB	A
Brighton & Hove	A
Bristol District	A
Broadstairs	A2
Bromsgrove UD	A
Broughton, Flint	A
Buckfastleigh	A2
Buckingham	A2
Buckley	A
Bungay	A2
Burnham-on-Crouch	A2
Burnham-on-Sea	A2
Burnley	A
Burton-on-Trent C.B.	A
Bury	A
Bury St. Edmunds	A1
Buxton	A
Byfleet	A1
Caernarvon	A2
Caernarvonshire, Cnty. of	‡A2
Calder Valley	A
Camberley District	A2
Cambridge	A
Cannock UD	A
Canterbury	A2
Cardiff	A
Cardiganshire, County of	‡A2
Carlisle	A

CURRENT RATES OF WAGES—Continued

Town.	Grade.
Carlton UD	A
Carmarthen—Borough of	A1
Carmarthenshire, Cnty of	‡A2
Carnforth	A
Castleford UD	A
Caterham	A
Chapel-en-le-Frith	A
Chard	A2
Charmy Down	A
Chatham District	A
Chatteris	A2
Cheadle (Staffs) RD	A
Chelmsford	A
Cheltenham	A
Chepstow	A1
Chertsey	A
Chester	A
Chester-le-Street UD	A
Chesterfield MB	A
Chesterfield RD	A
Chichester	A2
Chipping Norton	A2
Chipping Sodbury	A2
Chippenham (inc. Chippenham Within and Hardenhuish)	A2
Cirencester	A2
Chorley	A
Clacton	A1
Clay Cross UD	A
Cleethorpes MB	A
Clevedon	A1
Cleveleys	A
Clitheroe	A
Coalville UD	A
Cobham (Surrey)	A
Colchester	A
Colne	A
Colwyn Bay	A1
Congleton	A1
Consett UD	A
Conway	A1
Corby UD	A
Cornwall, County of	‡A2
Corsham District	A
Coventry CB	A
Cranbrook	A2
Cranleigh	A2
Cranwell Aerodrome Site	A1
Crawley	A1
Crewe	A
Crewkerne	A2
Cromer	A1
Crook and Willington UD	A
Crowborough	A2
Cuckfield	A2
Cwmbran	A
Dalton-in-Furness	A
Darlington CB	A
Dartmouth	A2
Darwen	A
Daventry MB	A2
Deal	A2
Denbigh Town	A2
Derby CB	A
Devizes	A2
Devon, County of	‡A2
Dewsbury CB	A
Didcot	A2
Diss	A2
Doncaster CB	A
Dorchester	A2
Dorking	A
Dorset, County of (except-ing Poole, Swanage and Wimborne A1)	A2
Dover	A2
Dovercourt	A
Driffield UD	A1
Drigg & Carleton	A
Droitwich MB	A
Dudley CB	A
Dunstable	A
Durham B	A
Eastbourne	A
E. Glam. & Mon. Val.	A
East Grinstead District	A2
East Kesteven RD	A2
East Retford MB	A
Eastwood (Notts) UD	A
Ebbw Vale & District	A
Edenbridge	A2
Ely	A2
Epping	A
Evesham MB	A2
Exeter	A
Exmouth	A2
Fakenham	A2
Falmouth	A2
Fareham	A
Faversham	A2
Felixstowe	A1
Filey UD	A
Fleetwood	A
Flint MB	A
Folkestone	A2
Frinton	A1
Frome	A1
Gainsborough UD	A
Gateshead CB	A
Gillingham (Dorset)	A2
Gillingham (Kent)	A1
Glastonbury & Street	A2
Glossop	A
Gloucester	A
Gloucestershire, Cnty. of	‡A2
Godalming	A2
Goole, MB	A
Goole RD (part—Airmyn, Hook)	A
Gosport	A
Grantham MB	A
Gravesend	A
Grays Thurrock UD Area	A
Great Yarmouth	A
Grimsby CB	A
Grimsby RD (part)	A
Guildford District	A2
Halesowen MB	A
Halifax CB	A
Halstead	A2
Haresfield	A1
Harlow	A
Harpenden	A
Harrogate MB	A
Hartlepool B	A
Harwell	A2
Harwich	A
Haslemere	A2
Hastings	A2
Hatfield (Herts)	A
Havant	A
Haywards Heath	A2
Heanor UD	A
Hemel Hempstead	A
Henley-on-Thames	A2
Hereford	A2
Herefordshire, Cnty. of	‡A2
Herne Bay	A2
Hertford	A
Hexham RD	A
Hexham UD	A
Heysham	A
Heywood	A
Higham Ferrers MB	A
High Wycombe	A
Hinckley UD	A
Hitchin	A
Hoddesdon	A
Holywell	A
Horley	A2
Horncastle UD	A2
Horsham	A2
Horwich	A
Huddersfield CB	A
Hull	A
Hunstanton	A2
Huntingdon (Staffs)	A
Ilkeston MB	A
Ilkley UD	A
Ipswich	A
Isle of Sheppey	A2
Isle of Thanet	A2
Isle of Wight	A2
Ilfracombe	A2
Jarrow B	A
Keighley MB	A
Kendal	A
Kenilworth UD	A
Kettering MB	A
Keynsham	A
Kidderminster MB	A
Kingskerswell	A1
King's Lynn	A1
Kingsteignton	A1
Kirkham	A
Knaresborough UD	A
Knutsford	A
Lancaster	A
Leamington MB	A
Leatherhead	A
Leeds CB	A
Leek UD	A
Leicester CB	A
Leighton Buzzard	A1
Leiston	A2
Leominster	A2
Letchworth	A
Lewes	A2
Lichfield MB	A
Lincoln CB	A
Liskeard	A2
Littlehampton	A2
Liverpool	*
Llandudno	A1
Llanelly (incl. Llanelly RD)	A
Llanfairfechan	A2
Llangollen	A2
London	*
Long Eaton	A
Looe	A2
Loughborough MB	A
Louth MB	A1
Lowestoft	A
Loxton	A2
Ludlow MB	A2
Ludlow RD	A2
Luton	A
Lyme Regis	A2
Lyneham (Devon)	A2
Lytham	A
Macclesfield	A
Maidenhead	A
Maidstone	A
Maldon (Essex)	A1
Maltby UD	A
Malton UD	A2
Malvern UD	A1
Manchester	A
Manningtree	A1
Mansfield MB	A
March	A2
Margate	A2
Market Harborough RD	A1
Market Harborough UD	A
Market Rasen UD	A2
Martock	A2
Maryport	A
Matlock UD	A
Melksham	A2
Melton Mowbray UD	A1
Merionethshire	A2
Merthyr	A
Mexborough UD	A
Middlesbrough CB	A
Middleton	A
Middlewich	A
Mildenhall	A2
Milford Haven UD	A1
Minehead	A2
Monmouth—Borough of	A1
Monmouthshire	A1
Morecambe	A
Moreton Valence	A2
Morley	A
Morpeth B	A
Morpeth RD	A
Mundesley	A2
Nantwich	A
Neath & Valley	A
Nelson	A
Newark MB	A
Newbury	A2
Newcastle-on-Tyne CB	A
Newcastle-under-Lyme	A
New Forest District	A1
Newmarket	A1
Newport, Mon.	A
Newport Pagnell	A2
Newquay	A2
Newton Abbot	A1
Normanton UD	A
Northallerton District	A
Northallerton UD	A
Northampton CB	A
North Shields	A
North Walsham	A2
Northwich	A
Norton Radstock	A1
Norwich	A
Nottingham CB	A
Nuneaton MB	A
Oakham RD	A2
Oakham UD	A2
Okehampton	A2
Oldham	A
Ongar	A
Ormskirk	A
Ossett & Horbury	A
Oswestry	A2
Oundle UD	A2
Oxford	A
Oxted	A1
Padstow	A2
Paignton	A1
Par	A2
Pembrokeshire (except Milford Haven)	A2
Penmaenmawr	A2
Penrith UD	A1
Penzance	A2
Peterborough, Soke of (Eastern Regional portion)	A1
Petersfield	A2
Pickering	A2
Plymouth	A
Pontefract MB	A
Pontypool & District	A
Pontypridd District	A
Porthcawl	A
Portishead	A
Portland Bill	A1
Portsmouth	A
Port Talbot	A
Preston	A
Princetown	A2
Pudsey MB	A
Pulborough	A2
Radnorshire, County of	‡A2
Ramsgate	A2
Raunds UD	A
Rayleigh	A
Reading	A
Redcar B	A
Redditch UD	A
Redhill & Reigate	A
Rhondda Valley	A
Richmond B (Yorks)	A
Ripon MB	A2
Rochdale	A
Rochester	A1
Ross-on-Wye	A2
Rossendale Valley	A
Rotherham CB	A
Royston	A1
Rugby MB	A
Rugeley UD	A1
Rushden UD	A
Saffron Walden	A2
St. Albans	A
St. Austell	A2
St. Helens	A
St. Neots	A2
Salisbury City	A2
Salisbury Plain	A2
Sandy	A2
Sawbridgeworth	A
Saxmundham	A2
Scarborough MB	A
Scunthorpe MB	A
Seaford & Newhaven	A2
Selby UD	A
Sevenoaks	A
Shaftesbury	A2
Sheerness	A2
Sheffield MB	A
Shepton Mallet	A2
Sherborne	A2
Shipley	A
Shoeburyness	A
Shoreham	A
Shrewsbury MB	A
Sirhowy Valleys	A
Sittingbourne	A2
Skegness UD	A1
Skipton UD	A
Sleaford UD	A1
Slough, Windsor & Eton District	A
Smethwick CB	†A
Snettisham	A2
Solihull UD	A
Somerset, County of	‡A2
Southampton and Eastleigh	A
Southend-on-Sea Dist.	A
Southport	A
South Shields CB	A
Southwold	A2
Spalding UD	A1
Stafford MB	A
Staines	A
Stamford MB	A1
Stantonwick	A
Stevenage	A
Stockport	A
Stockton RD	A
Stockton-on-Tees B	A
Stoke-on-Trent CB	A
Stoke Orchard	A1
Stourbridge MB	A
Stourport UD	A
Stowmarket	A1
Stratford-on-Avon MB	A
Stroud (RD Area)	A1
Sunderland CB	A
Sunningdale	A1
Sutton Coldfield MB	A
Swadlincote UD	A
Swaffham	A2
Swanage District	A1
Swansea	A
Swindon District	A
Swinton UD	A
Tamworth MB	A
Taunton	A2
Tavistock	A2
Tenterden	A2
Teignmouth	A2
Tewkesbury	A1
Thames Haven	A
Thetford	A2
Thirsk RD	A
Thorpe Bay	A
Thurrock UDC Area	A
„ North of to Billericay	A
Tilbury	A
Todmorden MB	A
Tonbridge	A1
Torquay	A1
Totnes	A1
Tring	A2
Trowbridge	A2
Truro	A2
Tunbridge Wells	A1
Tynemouth CB	A
Ulverston	A
Uppingham (Salop)	A1
Uttoxeter RD	A2
Uttoxeter UD	A1
Wakefield CB	A
Wakefield RD	A
Wallsall CB	A
Wallsend B	A
Walsden	A
Walton-on-Naze	A1
Ware	A
Warminster	A2
Warrington	A
Warwick MB	A
Wednesbury MB	A
Wellingborough UD	A
Wellington UD	A
Wellington (Somerset)	A2
Wells (Norfolk)	A2
Wells (Somerset)	A2
Welwyn	A
Welwyn Gar. City	A
West Bromwich CB	A
Westbury	A2
Westcliff-on-Sea	A
Westerham	A1
West Hartlepool CB	A
Westmorland (except Kendal)	A2
Weston-super-Mare	A1
Weybridge	A
Weymouth (including Portland Bill, excluding Portland Stoneyards)	A1
Whitby UD	A1
Whitby RD	A1
Whitehaven	A
Whitley & Monkseaton UD	A
Whitstable and District	A2
Wickford	A
Widnes	A
Wigan	A
Wigton	A2
Wilmslow	A
Wilts. County of	‡A2
Wimborne	A1
Wincanton	A2
Winchester	A1
Windermere	A2
Wisbech	A2
Witham	A1
Withernsea UD	A
Woking	A1
Wokingham	A2
Wolverhampton CB	A
Wolverton District	A2
Woodbridge	A2
Woodhall Spa UD	A
Woodstock	A2
Worcester CB	A
Workington	A
Worksop MB	A
Worthing	A2
Wrexham (incl. Cefn)	A
Wroughton	A1
Wylam	A
Wymondham	A2
Yate	A2
Yeovil Borough	A1
York CB	A
Ystalyfera	A

For Birkenhead, Liverpool and London the rates are:—Craftsmen, 4s. 5d.; Labourers, 3s. 10½d. In the case of London the rate beyond the 12-mile radius is: Craftsmen, 4s. 4½d.; Labourers, 3s. 10d. †Plus 2d. per working day. ‡This is the County rate and applies except where higher grades are stated.

NOTE.—Carpenters and Joiners providing own tools when employed in establishments operating under the Supplementary Rules for Woodworking Factories and Shops, receive 2d. per day; when employed on other building industry work, 4d. per day.

WOMEN'S RATES.—In all districts throughout the country the rate of wages for women engaged in craft processes is 3s. 5d. per hour. Women engaged on work other than craft processes, 3s. 1d. per hour.

For Building Trade Wages in Scotland see page 714.

OVERSEAS BUILDING

From Our Own Correspondents

CUBA.—A copper wire factory is to be built in Cuba for a new organisation called Productos de Cobre de Cuba Pheldrak, SA a joint company of Phelps Dodge (USA) and Draca (Holland Insulated Wire and Cable Limited.) The site of the factory has not so far been announced. It is reported that the Firestone Tyre and Rubber Company will set up a $4m. tyre-making plant in Havana, to employ 500 workers.

It is also reported that the Celanese Corporation of North America will build an acetate factory to employ 400 workers. The site of this factory is believed to be under discussion. Some $30m. are to be spent on hotels and tourist attractions. The Government is understood to be preparing a public works programme for highways and ports on the Isle of Pines.

FRENCH EQUATORIAL AFRICA.—A new 630ft. long lighterage mole equipped with sheds and a travelling crane is to be built at Port Gentil. A number of lighthouses along the coast of this territory are to be erected or rebuilt. A study company has now been established to survey the proposed railway from Bangui to Fort Archambault in the Tchad.

FRENCH WEST AFRICA.—It has now been decided to proceed with the establishment of a large hydro-electric power station at Souapiti on the River Konkure in Guinea and to build a plant for the manufacture of aluminium. First step in this large project will be the construction of a dam on the Konkure river and the installation of the power station with annual production of 3,000 million kilowatt hours.

HONG KONG.—The foundation stone of Hong Kong city hall will be laid next year. The cost is given as $20m. One of its many uses will be as a rendezvous for international conferences. The building will contain a public library, an art gallery and a concert hall . . . . A $14m. skyscraper of 17-storeys is being built on a central site that has been vacant for three years. Excavation and foundation work commenced recently. The building has been designed by Mr. Fung Tsun for the Central Development Company but no contract is said to have been placed yet for the constructional work. It is reported that tenders will be called for when the piling is finished.

MALAYA.—Work is beginning shortly on a number of housing projects in Ipoh, Perak, at a total cost of £4½m. The biggest single building project now under way is the Canning Garden Estate involving the construction of 2,400 units of houses and shops, a school, cinema, market and playing fields. The Federal Housing Trust has also begun work on a £500,000 project including 400 houses. In addition there are numerous smaller schemes for building bungalows, terraced houses and four new cinemas. The Government has been asked to approve a plan for building a home for handicapped people at a cost of £200,000. The Singapore City Council is to build a multi-storey car park at a cost of £100,000 on the present parking space at the junction of Cecil-street and Cross-street.

A new mile long road between Kuala Lumpur and the satellite town of Petaling Jaya has been planned at a cost of £300,000. Surveys of the area are nearing completion and it is hoped that work can be started in a few weeks' time. An interesting statement by the retiring Vice-Chancellor of the University of Malaya reveals that during the next five years about £2m. will be spent on the building and development of University faculties in Kuala Lumpur.

Some 300 acres have now been set aside for the new Federal Hospital which is to be erected near the University. Several large buildings are envisaged in this project. The original 7½-acre site allocated for the new Polytechnic at Shenton Way is being extended by the Singapore Government to a total of 11 acres. Construction work on the £1m. project will begin when plans have been approved by the Government.

The general manager of the Central Electricity Board has estimated that Malayan consumption of electricity which is now 240,000 kws. will rise to over 1,270,000 kws. by 1980. In order to meet this increase it is estimated that £75m. worth of additional generating stations will be required.

SPAIN.—The National Housing Institute has been authorised to raise £120m. by public subscription for expenditure on housing for the five-year plan which begins this year.

Progress at Kariba

There has been such a rapid build up of staff and equipment at Kariba by Richard Costain Ltd., since they were awarded the £3½m. Township contract at the end of February, that work is already one month ahead of schedule and a start has now been made on the main construction. Over 200 items of plant and equipment, ranging through dumpers, excavators, wheel tractors, trailers, tippers, compressors, lorries of from 5 to 21 tons capacity and heavy earth-moving crawler tractors, are in constant use. A quarry to produce 125 cu. yds. of stone per day and a concrete block factory which will produce blocks equivalent to 20m. bricks in 20 months are being set up; and sand from the rivers in the area to the extent of 200 yards per day is being excavated and carried to the site. Maintenance of plant and equipment on site demanded the construction of a full-scale workshop; and to facilitate the movement of workpeople in cases of illness and emergency, an airplane has been purchased.

Within four days of the start, heavy earth-moving machinery was at work clearing ground for the temporary camp site; by the third week 13 caravans had been sited on terraces cut into the steep slopes of the hills, 15 aluminium houses and 25 tents erected. By maintaining this rate of progress the temporary work for staff accommodation, and the construction of canteens, kitchens, stores, first-aid posts and office blocks, has been completed. The labour force has been built up to about 120 Europeans and 1,100 Africans.

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Mombasa Hotel

* Coastal Hotels, Ltd., PO Box 312, Kampala, Uganda, invite quotations from UK manufacturers for air conditioning and cold storage plant for their proposed Mombasa Hotel. Architects are Dr. E. May and Partners, PO Box 2418, Mombasa. Manufacturers interested should write direct to Coastal Hotels, Ltd., notifying the United Kingdom Trade Commissioner in East Africa, PO Box 220, Memorial Hall, Nairobi, Kenya, that they have done so. (Tel.: Chancery 441, Ext. 776; Ref. ESB/8275/56.)

Trade Opportunity, B. Honduras

* Mr. David Estephan H., PO Box 155, Belize, British Honduras, has told the UK Trade Commissioner at Kingston, Jamaica, that he would like to represent United Kingdom manufacturers of galvanised nails, galvanised corrugated roofing and cement. He is considered to be a suitable connection for UK firms. Letters direct to Mr. Estephan H., notifying the UK Trade Commissioner, Barclays Bank Building, King-street (PO Box 393), Kingston, Jamaica, that they have done so. (Tel: Chancery 4411, Ext. 776; ref ESB/13384/56.)

Cement-making Plant, India

Vickers, Ltd, Babcock and Wilcox Ltd., and The Associated Cement Companies Ltd. of India, are carrying on negotiations regarding the possibility of setting up a joint company in India to manufacture cement making machinery, boilers and other engineering products.

Expansion in South Africa

Following the recent visit to South Africa of Mr. Richard Aisher, one of the directors, the Marley Tile Co., Ltd., have announced that they will shortly open a roof tile manufacturing plant at Salisbury, Southern

* From the Board of Trade Special Register Information Service. The telephone number and extension at the end of the paragraphs relate to the department of the Export Service Branch, Lacon House, Theobalds-road, WC1, where further information can be obtained.

Rhodesia. Capacity production will be ensured by all the latest methods employed at the other Marley factories in which a total of 600 million roof tiles are made annually.

The Salisbury plant will be the second the company has built in South Africa. A floor tile factory began operating at Nigel, in the Transvaal, two years ago.

Bridge Over the Matetsi

*Tenders are invited by the Federal Tender Board, Southern Rhodesia, from contractors experienced in bridge construction, for the construction of a new bridge over the Matetsi River on the Bulawayo-Victoria Falls Road. The closing date for tenders is June 29. (Tel.: Chancery 4411, ext. 738 or 771, Ref. No. ESB/12250/56.)

Wayatinah Tunnel, Tasmania

* The Hydro-Electric Commission, Tasmania, has called for tenders for the construction of part of the Wayatinah "A" Tunnel. The work calls for:

The excavation of the open-cut access portal and the excavation of the access tunnel; the excavation of the main tunnel from the junction of the access tunnel and the Penstock Tunnel; the concrete lining of the main tunnel and of the access tunnel; concrete structures in the open at the access portal; and ancillary works. The closing date for tenders is July 2. (Tel.: Chancery 4411, ext. 738 or 771, Ref. No. ESB/13414/56.)

CARIBBEAN BUILDING

From Our Own Correspondent

Puerto Rico: The Capitol Construction Co. have been awarded a $3½m. contract for work at the Roosevelt Roads air base, for the US Navy. The work consists of lengthening and strengthening runways, new taxiways, and a new control tower. The contract has been let by the Navy's Bureau of Aeronautics, who are at present planning other large construction works at the same air base.

Trinidad: Two Chinese industrialists from Hong Kong, Mr. C. Y. Tang and Mr. C. S. Yung, now on a visit to the West Indies, propose to establish a factory in Trinidad to produce wallboard from bagasse—the fibrous residue left after extraction of the juice from sugar cane, and which at present is thrown away as waste. Local business man, Edwin Lee Lum, has sponsored their visit to Trinidad.

The Ministry of Works in England have commissioned Mence and Moore, L/ARIBA, of London and Port of Spain, as architects for the new $72,000 house for the United Kingdom Trade Commissioner in the British West Indies. Mr. G. T. Wilby, Estates Surveyor of the MoW, is in Trinidad to inspect sites.

During the past six or seven years the Trinidad and Tobago Electricity Commission have spent large sums of money on generation equipment. The General Manager, Mr. K. Finch, has now submitted to the Government details of a $24m. programme to be spent over the next five years for distribution of current.

A proposal to reclaim the Laventille swamp, lying to the East of Port of Spain, between the new swamp road and the railway line, is being considered by the Government. The scheme has been prepared by the Department of Works and Hydraulics, and will provide valuable building land at an approximate cost of $1¼m.

Lever Brothers plan to build a $5m. factory at Champ Fleurs, near Port of Spain, for making soap and chocolate bars. The design is by the Technical Division of Unilever, Ltd. Work is expected to start next year.

Dominica: The Republic of Dominica expects to spend $112m. on public works during the next four years. A contract has already been placed for the construction of a 96-mile mountain road value $36m. and other projects include a new airport to cost $9m. designed by Robertson Ward (an American architect resident at Mill Reef); and new port facilities at Puerto Viejo estimated at $4½m.; Boca Chica, $3½m.; and Rio Haina, $3½m.

Tobago: The Government plan to spend $2,171,500 in the next four years on road improvement schemes over the island. In addition, a loan from the CD and W organisation will be sought to provide for a north coast road from Castara to Charlotteville, which was planned by the Department of Works and Hydraulics in 1951.

Jamaica: The Mayor of Kingston, Councillor Balfour Barnswell, has announced a $10m. improvement programme including a new town hall, playing fields, fountains and arches. . . . The workshop facilities of the Public Works Department at Kingston and Montego Bay are to be rebuilt at a cost of $912,000, with two new repair depots established at Mandeville and Port Maria.

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INTERNATIONAL BANK

Loans for Large-Scale Projects Overseas

THE International Bank has made loans to Norway, Haiti, and Burma for large-scale projects. In Norway a sum of $25m. has been made available to assist in the financing of the Tokke hydro-electric project, the total cost of which is estimated at $70m.

The project consists of dams and tunnels in the upper reaches of the Tokke and Vinje rivers to create reservoirs having a storage capacity of 1,220m. cubic metres, diversion dams in the Tokke and Vinje rivers and a 15 kilometre power plant in which four 100,00kw high head Francis turbines will be installed. Annual generation will be about two-billion kwh.

The engineering will be done by the Norges Vassdrags-og Elektrisitetsvesen, Oslo, an agency of the Norwegian Government. The letting of contracts for construction will be handled in the usual Norwegian way—specifications and drawings will be prepared and requests for bids submitted to qualified contractors. Major equipment specifications will be drawn up by the NVE construction department and issued to a selected list of Norwegian and foreign manufacturers.

In cases where there is a choice between goods of foreign and domestic origin it is the practice to give preference to domestic goods. It is important to note that the maximum preference applicable to the bulk of the equipment to be used on the project would be 20 per cent., including whatever import duty is payable.

In Haiti the Bank loan is about $2,600,000 which is to be used to finance imported equipment, materials and services needed to carry out a three-year programme for the reorganisation and expansion of the Maintenance Section of the Highway Service of the Public Works Department Port-au-Prince, and the rehabilitation, repair and maintenance of about 1,160 kilometres of primary and secondary roads. The purchase of all equipment for the project will be subject to international competitive bidding.

To the Burma Railway Board of Rangoon the Bank has allotted $5,350,000 to assist in financing the rehabilitation and improvement of the Burma railways. The Commissioners for the Port of Rangoon have also received a loan of $14m, to assist in financing the rehabilitation and improvement of the Port.

The railway project consists of the procurement of rolling stock for use in the Burma railways operations and the construction and repair of bridges including the building of a new steel trestle bridge across the Sittang River about five miles from the site of the previous bridge destroyed during the last war.

The Port of Rangoon project consists of the reconstruction of three general cargo berths, the construction of storage facilities for these berths, and of roads and tracks and the acquisition of various cargo handling and floating equipment. All supplies here, too, will be purchased by international bidding.

The SCOTTISH BUILDER

Industry and Education

IN the one-day conference being organised in Glasgow on June 19 on industry and technical education, special prominence is being given to education for the building industry.

The Glasgow and West of Scotland Regional Advisory Council, who have arranged the conference, are investigating the needs of industry and commerce in the different fields of technical training. At the conference, at which Mr. Andrew Hood, Lord Provost of Glasgow, Lord Strathclyde, the Minister of State for Scotland, and Sir Walter Puckey will speak, there will also be an afternoon period devoted to group discussion of the particular industrial fields.

The group considering education in building will have the chairman of the Scottish Building Apprenticeship Council, Mr. R. Smith, as chairman and as main speaker Mr. N. C. Sidwell, head of the building department at the Heriot-Watt College, Edinburgh.

Other fields being considered include commerce, distributive trades, electrical, mechanical and production engineering with a summary of group conclusions at the end of the conference.

Scottish Housing, April

THE NUMBER of new houses completed in Scotland in April was 2,134, bringing the total this year to 8,832. Permanent houses built in Scotland under the post-war housing programme now number 265,474. This is shown in the monthly return just published by the Department of Health for Scotland, and the Ministry of Housing and Local Government, HM Stationery Office, price 3d. The total built in April, 1955, was 2,278; in the first four months of that year it was 10,420.

Arbroath Plan Approved

THE Secretary of State has approved, subject to minor modifications, the development plan for the Burgh of Arbroath. The plan sets out the Town Council's proposals for the developments expected within the next twenty years, defines areas for housing, schools, open space and industrial development, and provides for a number of new roads in the burgh.

Building Grants for Crofters

THE conditions attached to grants which may be given for the erection, improvement or rebuilding of houses and other buildings, under the Crofters (Scotland) Act, 1955, are set out in regulations which have now been made by the Secretary of State and came into force on May 30.

The 1955 Act re-enacted the provisions of the Agriculture (Scotland) Act, 1948, which enabled the Secretary of State to give grants to crofters in the Highlands and Islands for the erection or improvement of their croft houses or buildings. In addition, the Crofters Act provided for the extension of this assistance as regards farm buildings other than houses to the owner-occupiers of small farms in the crofting counties of Argyll, Caithness, Inverness, Ross and Cromarty, Sutherland, Orkney and Zetland. This assistance is available to owner-occupiers who are of substantially the same economic status as crofters, and whose holdings do not exceed 50 acres in extent or £50 in annual value.

Full information about the assistance available, and application forms may be obtained from the Department of Agriculture for Scotland, Crofters Branch, St. Andrew's House, Edinburgh, 1. Copies of the regulations, entitled the Crofters, etc., Building Grant (Scotland) Regulations 1956, may be obtained from HM Stationery Office.

NEW BUILDINGS

Aberdeen.—The Housing Committee plan to build 77 houses at Kincorth housing estate.

East Kilbride.—Plans in hand for the use of land for industrial and town development at the Village area. A: Frank Scott (L), Torrencehse., East Kilbride.

Fifeshire.—Plans to be prepared for Council houses at Dairsie, Craigrothie and Strathmigle. Council A: Robert S. Lawrie (F), County-bldgs., St. Catherine-st., Cupar.

Glasgow.—Plans in hand for an eight-storey addition at Blythswood-sq. A: Will J. B. Wright & Kirkwood (FA), 9, Woodside-pl., Glasgow, WC3.

Glasgow.—Plans prepared for new bonded warehouse at Dawson-rd., Craighall. A: Robert J. Smith (F), 180, West Regent-st., Glasgow, WC2.

Glasgow.—Plans to be prepared for the Shipping Federation, Ltd., The Broomielaw, for new block of buildings at 182 to 186, Broomielaw. A: Alexander Gardner & Gardiner Maclean (F), 6, India-st., Glasgow, WC2.

Glasgow.—Plans in hand for Morrisons Associated Co., Ltd., Howard-st., for new five-storey block at the Stockwell. A: F. Mallon, 120, Howard-st., Glasgow, C1.

Glasgow.—Plans in hand for additions and alterations for the Co-operative Society, Ltd., at 320, Cumberland-st. A: Kenneth Masson (F), 119, Paisley-rd., Glasgow, SC2.

Glasgow.—Plans to be prepared for new schools and community centre for which the Corporation has set aside the following sites. At Toryglen No. 1 site, Drummond-dr.—prim. Prot.; at sites 2 and 7 Kerrylomand-ave.—nursery sch. and com. cen.; at sites 4, 5 and 6—nursery, prim. and sec. schs., and at Site 3—nursery sch. Architects to be appointed.

Glasgow.—Plans prepared for new building at Dyke-rd. A: Cameron Henderson (F), 257, West George-st., Glasgow, WC2.

Glasgow.—Plans prepared for alterations and additions at Duke-st., Dennistoun. A: William Graham (F), 30, Newmarket-st., Falkirk, Stirling.

Glasgow.—Plans prepared for new building at Berwick-dr. A: John Wilson & Co., 170, Hope-st., Glasgow, WC2.

Glasgow.—Plans approved for Messrs. J. & R. Tennant & Co., Ltd., Duke-st., for new extensions at Dennistoun. A: Thomas S. Cordiner (A), Blythswood-chmbrs., West George-st.

Glasgow.—Plans prepared for the Royal Restaurant, Ltd., for additions and alterations at 10, West Nile-st. A: Weddle & Thomson (F/A), 216, Bath-st., Glasgow, WC2.

Glasgow.—Plans prepared for Thomas & John Donnelly for additions and alterations at 1 to 5, Golspie-st., Govan. A: John L. Edgar, 96, Campbell-ave., Glasgow, SC1.

Glasgow.—Plans prepared for Walter Hubbard & Co., Ltd., Hillhead, for additions and alterations at 71, Otago-st. A: John B. Wingate (F), 26, Wellington-st., Glasgow, WC2.

Hamilton.—The Dean of Guild Court has approved plans for new jun. sec. RC sch. at Udston, to cost £178,600. The TC also has had plans passed for 52 two-apartment houses at the Burnbank-rd. housing site (est. cost £45,994).

Lanarkshire.—Plans in hand for William R. Campbell, 462, Victoria-rd., Glasgow, for new scheme of reconstruction and additions at Main-st., Bellshill. A: Gavin Paterson & Son (F/A), 6, Cadzow-st., Hamilton.

Lanarkshire.—Plans in hand for new shops, office buildings and workshops at Main-st., Larkhall. A: Angus Macmillan (F), 27, Summerside-st., Larkhall.

Lanarkshire.—Plans in hand for new halls at Brodisholm-rd., Baillieston. A: C. Cameron (F), 77, Bannercross-rd., Baillieston.

Lanarkshire.—Plans in hand for Messrs. Robert Baxter & Sons, Ltd., for extensions at Main-st., Cleland. A: William Nimmo (F), Commercial Bank-bldgs., Motherwell-Wishaw.

Lanarkshire.—Plans in hand for the Carluke Co-operative Soc., Ltd., Union-st., for new buildings at Lawhill-rd., Law. A: Forrest & Agnew (F), School-l-., Carluke.

Newhouse.—Plans in hands of the architects of the Scottish Industrial Estates, Ltd., 3, Wood-side-ter., Glasgow, WC3, for new extensions to factory buildings at the Newhouse Industrial Estate.

Renfrewshire.—Plans prepared by their architects for scheme of semi-detached houses which are to be erected at Auchmannock development site, Oldhall, Paisley, by James Y. Keonie & Co., Ltd., Floors-st., Johnstone.

SCOTTISH BUILDING TRADE WAGES

FOLLOWING are rates of wages authorised by the Scottish National Joint Council as from April 16, 1956. They apply to the whole of Scotland, including the islands of Orkney, Shetland, etc.

Grade A: Craftsmen 4s. 3½d.; Labourers 3s. 9d.

For apprentices, the rates are:

Year.	Percentage of Craftsman's rate.	For week of 44 hours.
		s. d.
1st	25	47 2½
2nd	33½	62 11½
3rd	50	94 5
4th	66⅔	125 10½
5th	75	141 7½

For female labour, the rates are:

	s. d.
Operatives on craft operations (at end of probationary period)	3 9
Operatives on labouring operations (at end of probationary period)	3 5½

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FUTURE CONSTRUCTION

Full details of Public Appointments open will be found in the Advertisement pages of this and previous issues.

CONTRACTS OPEN

For some contracts still open but not included in this list see previous issues. Those with an asterisk are advertised in this number. The dates at the heads of paragraphs are those for the submission of tenders; a dagger (†) denotes closing date for applications; the name and address at the end refer to the person from whom particulars may be obtained.

BUILDING

JUNE 12.

*†**Plymouth City C.**—Five shops and 10 maisonettes, George-st., Devonport; five shops and five maisonettes, Austin Farm estate; six houses, Blandford-rd., Efford, and additions to civil defence rescue set, Paradise-rd. School, Stoke. City A, Seymour-rd. Dep. £3 3s. each.

JUNE 13.

*†**Uxbridge BC.**—33 flats, Vine-st. H. E. G. Stripp, Boro' S, 263, High-st.

JUNE 14.

*†**North East Metropolitan Regional Hospital Board.**—10 staff houses, South Ockenden Hospital. Sec., 11a, Portland-pl., W1.

*†**North East Metropolitan Regional Hospital Board.**—Two-storey unit South Ockenden Hospital. Sec., 11a, Portland-pl., W1.

*†**North East Metropolitan Regional Hospital Board.**—Boiler house, Ilford maternity hospital, Eastern-ave., Ilford. Sec., 11a, Portland-pl., London, W1.

*†**Surrey CC.**—School meals accommodation, Mitcham County Boys' gram. sch. County A, Kingston.

*†**Trowbridge UDC.**—126 dwellings. C.

JUNE 15.

*†**Southampton CB.**—Repair of war damage to municipal block, west wing, Civic Centre. Boro' A. Tenders by July 16.

*†**Worcestershire CC.**—Additions County sec. sch., Four Pools-la., Evesham. R. Sheppard & Ptnrs., architects, 5, Southampton-pl., London, WC1. Dep. £2 2s.

JUNE 16.

*†**Bromley BC.**—28 old people's bungalows, Springfield-rd. BE. Dep. £2 2s.

*†**Essex CC.**—Bungalow, Thurrock Technical College. County A, Chelmsford.

*†**Malvern.**—New Dyson Perrins church sec. sch. T. R. Bateman (A), 21, Vine-st., Evesham Dep. £2 2s.

JUNE 18.

*†**Holland (Lincs) CC.**—School, Wyberton, near Boston. County A, Boston. Dep. £2 2s.

*†**Luton BC.**—Granolithic flooring and thermoplastic tile flooring to 186 houses, Vauxhall Park estate, and 415 houses, Runfold estate. Boro' A. Dep. £2 2s.

*†**Macclesfield BC.**—Re-covering floor of Assembly Room, Town Hall. Boro' A, 3, Jordangate. Dep. £1 1s.

*†**Somerset CC.**—Four schs. One each at Crewkerne, Frome, Keynsham and Weston-super-Mare. County A, Taunton. Dep. £2 2s. each

*†**Southampton CB.**—36 flats and garages, Vyse-la. BE.

JUNE 19.

Rushden UDC.—38 houses and 12 flats at Hayden-rd. site. E&S.

JUNE 20.

*†**Coulsdon & Purley UDC.**—100 houses, Old Lodge estate, Purley. E&S. Dep. £3 3s. Tenders by July 19.

*†**Hampstead BC.**—18 two-storey shops with 50 flats over, Finchley-rd., NW3. TC.

Melford RDC.—27 houses at Great Cornard. A: H. C. Hughes & Peter Bicknell (F/F), Tunwell's-court, Trumpington-st., Cambridge. Dep. £3 3s.

*†**Norfolk EC.**—Pair of semi-detached dwelling-houses, Sidestrand Hall, near Cromer. Chief Ed. Officer, Stracey-rd., Norwich.

JUNE 21.

*†**Malden and Coombe BC.**—10 houses, 65, Cromwell-ave. J. Apse, Boro' E&S.

*†**West Sussex CC.**—New sec. mod. sch. at Ifield, Crawley. County A, Chichester.

JUNE 22.

*†**Beds EC.**—New building, Wristlingworth sch. County A, Bedford.

***Ealing BC.**—Twenty-seven flats, Lime Trees estate, Northolt.. BS. Dep. £2.

JUNE 23.

***Haverhill UDC.**—31 dwellings, North-av., Parkway housing estate. J. C. Myers (L), High-st. Dep. £5 5s.

JUNE 27.

***Lincoln (Kesteven) CC.**—Implement store, Sleaford sec. mod. sch., Westholme Grounds, Drove-la., Sleaford. County A, Sleaford.

***Lincoln (Kesteven) CC.**—Pair of police houses, North Parade, Sleaford, and pair at Exeter-gdns., Stamford. County A, Sleaford.

JUNE 29.

Swinton & Pendlebury BC.—156 houses and 16 flats and one block of garages, roads, sewers, etc., Parkfield estate. BE&S. Dep. £5 5s. (amended date).

***Wrexham BC.**—86 dwellings, Queen's Park estate, section 8. BE&S. Dep. £3 3s.

JUNE 30.

*†**Oxfordshire CC.**—Prim. sch., Bicester. County A, Park End-st. Offices, Oxford.

*†**Tottenham BC.**—Extensions, Central Library, High-rd., N17. BE. Dep. £2 2s. Tenders by Aug. 27.

JULY 2.

***Middleton BC.**—18 flats and 20 houses, Hollin estate. G. Syddall, Boro' A. Dep. £2 2s.

***Slough BC.**—Renewal of roof coverings to 50 temporary bungalows. Housing Manager, 34, Ledgers-rd.

JULY 3.

***Tutbury RDC.**—62 houses and bungalows, Croft site. E&S, 44, Rolleston-rd., Burton-on-Trent. Dep. £2 2s.

JULY 4.

***Chingford BC.**—18 houses, Valley Side estate extension. BE. Dep. £2 2s.

JULY 6.

***Southport CB.**—Additional classroom, Farnborough-rd. jun. sch., Birkdale. Boro' A & TP Officer, 99/105, Lord-st. Dep. £2 2s.

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JULY 7.

***Leicester City.**—Extension to laundry, Aylestone Baths, Knighton Fields-rd. West. City S. Dep. £1 1s.

JULY 11.

Birmingham City C.—88 eight-storey flats ("Melville-court") at Melville-rd., Edgbaston. City A. Dep. £2 2s.

JULY 12.

***Erith BC.**—122 maisonettes, 48 flats and six shops, Picardy-st., Belvedere. BE&S. Dep. £2 2s.

JULY 14.

***Hemel Hempstead BC.**—26 houses and 83 dwellings, Highfield neighbourhood. Boro' & Water E.

PAINTING, MATERIALS, ETC.

JUNE 16.

*†**Essex CC.**—Internal renovations, Romford County High School for girls. County A, Chelmsford.

JUNE 18.

*†**Northamptonshire CC.**—Heating and electrical installation new classroom block, Brackley High School. County A, Northampton.

JUNE 21.

*†**Leeds Regional Hospital Board.**—Heating and hot water supply, General Hospital, Newall Carr-rd., Otley. Arch. to Board, Park-parade, Harrogate. Dep. £2 2s. Tenders by July 23.

JUNE 30.

*†**Bristol City C.**—Installation of heating, etc., Southmead sec. sch. City A. Dep. £2 2s. Tenders by Aug. 31.

***South West Metropolitan Region.**—External painting and renovations, Park Prewett and Rooksdown Hospitals, Basingstoke, and at Wimble Hill Hospital, Crondall, near Farnham. Fredk. Hales, Group Secretary, Park Prewett Hospital, Basingstoke. Dep. £2 2s.

MUNICIPAL AND CIVIL ENGINEERING WORKS, ETC.

JUNE 18.

Brighouse BC.—Contract No. 1—700 yds. 12 in., 10 in. and 6 in. dia. spun-iron pipes and construction of covered service reservoir (capacity 750,000 galls.) in mass concrete, booster house and ancillary works. Contract No. 2—Provision and erection of booster plant in duplicate, capacity 5,000 galls. per hour to a total head of 150 ft. Arnold Brooksbank, MICE, constg. eng., 48, Sunbridge-rd., Bradford, 1, or Boro' E&S. Dep. £3 3s.

Rotherham CBC.—2,000 lin. yds. 9 in. to 36 in. sewers, with manholes, overflow chamber, etc. Boro' E: E. J. Manson, B Eng. AMICE, Dep. £3 3s.

Sittingbourne and Milton UDC.—Laying of water mains (a) 1,160 lin. yds. up to 4 in. dia. at Park-drive estate; (b) 2,200 lin. yds. up to 4 in. dia. at Ufton Court estate. Either or both. E&S: Central-ave., Sittingbourne. Dep. £3 3s.

JUNE 19.

Cheshire CC.—Realignment, widening and regrading of 650 lin. yds. of Winchester-Preston trunk road, A50, at Holmes Chapel railway bridge including lowering of carriageway under bridge. County S. Dep. £5 5s.

JUNE 20.

Pewsey RDC.—Housing site works at North Tidworth, comprising 3,200 sq. yds. tarmacadam carriageways, 1,750 sq. yds. tarmacadam footpaths, concrete kerbing and edging, 1,600 lin. yds. 6 in. (on and off site) soil sewers, 440 lin. yds. 9 in. to 15 in. SW sewers, 720 yds. 3 in. and 4 in. water mains, sewer pumphouse and ancillary works. E&S. Dep. £3 3s.

JUNE 22.

Cambridgeshire CC.—Making up of Shelford Park-rd, Great Shelford; Highfield-rd., Impington; Poplar-rd., Histon and Home-close, Histon, including reconstruction, strengthening and shaping of 1,000 lin. yds. roads in hot rolled gravel asphalt, kerbing, provision of footpaths and laying of SW drains. County S.

JUNE 23.

Kent CC.—Construction of 28 ft. 8 in. single-span twin bridges, each 42 ft. wide in prestressed concrete and brick-faced mass concrete, to carry Ashford By-pass over Warren-la. Superstructure comprises 42 pre-tensioned precast beams, 38 ft. 6 in. long, with transverse post-tensioning; substructure of brick-faced mass concrete abutments and wing walls, and foundations of r.c. capping beams on precast concrete piles. County S. Dep. £5 5s.

JUNE 25.

Chesterfield RDC.—Amber Valley sewerage and sewage disposal scheme, comprising ten miles of sewers and rising mains, one ejector station and extensions to sewage disposal works. Ccls' E. Dep. £5 5s.

JUNE 26.

Merioneth CC.—Reconstruction of Pont Buarth Glas and ancillary road works on Dolgelley—Shrewsbury trunk road, A.458, three miles north of Dinas Mawddwy, including construction of 18 ft. 6 in. skew span r.c. bridge with masonry-faced abutments and road works extending to 250 yds. County S: Dolgelley. Dep. £3.

JUNE 30.

Bacup BC.—Covering of nine water storage tanks at Sheephouse reservoir to be carried out in r.c., total area 2,000 sq. yds. Water Engr. Dep. £2 2s.

JULY 2.

East Devon Water Board.—Laying and jointing of 11,826 yds. 4 in. and 5,125 yds. 3 in. spun-iron water main from Feniton to Plymtree, Honiton, and incidental works. Rofe and Rafferty, engrs., 3, Victoria-st., SW1. Dep. £2 2s.

GENERAL BUILDING WORK

(LONDON)

Bermondsey.—FLATS, SHOPS AND GARAGES.—An area of some 9 acres, between Tower Bridge-rd., Abbey-st., the railway viaduct and Stanworth-st. is to be redeveloped by a total of 304 dwellings, 15 shops and some garages. Phase I of the scheme has already been put in hand with the acceptance of the Building Manager's estimate for Block I of Abbey-st. (North) buildings. Block 2 will consist of 28 flats in a seven-storey block and Block 3 will contain four shops and four dwellings, and will complete Phase I. For Phase II, the site is already partly cleared, but Phase III will mainly consist of slum clearance. Boro' E&S: Harold C. Coss, MIMunE, ARICS.

Hampstead.—SCHOOL.—A start is expected in 1956-7 on the second stage of Fitzjohn's cnty. prim. sch.

Lambeth.—SITE ACQUISITION.—Six houses, one house and shop, four cleared sites and a vacant garage at an island site of two-thirds of an acre at South Lambeth-rd. to be acquired by LCC for partial redevelopment for housing purposes.

London, SW.—BARRACKS.—Plans are under consideration by the War Dept. for the reconstruction of Chelsea and Wellington Barracks.

St. Marylebone.—SCHOOL.—The second stage of Barrow Hill-rd. county prim. sch. is expected to be started in the current year.

St. Pancras.—SCHOOL.—Work is expected to start during next few months on new Prospect county sec. sch., Sidmouth-st., WC1.

Stockwell.—SCHOOL.—A new county sec. sch. with 1,600 places for boys and girls is to be built by the LCC at the site of the former orphanage between Clapham-rd., Stockwell Park-rd. and Stockwell Park-crescent. The first stage will necessitate demolition of part of the existing buildings, now used as a sch. equipment depot, and the erection of a seven-storey teaching block with lifts, with geography rooms on the roof and part of ground floor open for use as a covered play space, the erection of a two-storey workshop block, a gymnasium block incorporating the existing swimming bath and a school-keeper's house. An assembly hall, a house block incorporating kitchen and serveries, administrative accommodation and a second gymnasium will be erected in the second stage. The buildings generally will be of reinforced concrete. Estimated cost of the scheme is £595,360.

Tottenham.—FLATS.—BC's plans for the present year include two L-shaped blocks of 112 flats at the Rectory Farm site, 66 flats in one eight-storey and two two-storey blocks at Hampden-close and a further development at the Tewkesbury estate, which may include one tall block. The Boro' Architect is V. A. P. Jolley, ARIBA.

Uxbridge.—CIVIC CENTRE.—Sketch plans for new council chamber and offices, estimated to cost £300,000, at a site adjoining the Middlesex CC's area offices, which are to be demolished for road widening, are in course of preparation by the Council's architect, J. Brandon-Jones (A), 2, Redington-rd., NW3. A space is to be left on the site plans for an assembly hall, estimated to cost £150,000. It will probably be some years before the scheme can be started.

Wandsworth.—SCHOOLS.—Work is expected to start during the next few months on three RC voluntary prim. schs., *viz.*, La Retraite, Clapham; Sacred Heart, Putney (first stage), and St. Bede's, Thornton-rd, Clapham, SW12. Work on a fourth project, Norwood RC sec. sch., Streatham, is expected to start in current year.

Westminster.—TECHNICAL COLLEGE EXTENSIONS.—A scheme for the provision of an assembly hall, with an auditorium of 2,075 sq. ft., a stage of 750 sq. ft., a balcony and changing and ancillary accommodation in the basement at Westminster Technical College, has been approved by the Education Committee of the LCC. Total est. cost £46,150. The foundations are to be strengthened to provide for teaching accommodation above the hall to be added later if required. The architects are Goodhart-Rendel, Broadbent & Curtis, FF.RIBA, 22, Whitehall, SW1.

Woolwich.—FLATS, OLD PEOPLE'S HOMES AND GARAGES.—32 one-room and 72 two-room flats, eight old people's homes and 16 lock-up garages are proposed at a site at Middle Park-ave., instead of the 36 small flats previously proposed. Boro' E&S is W. H. Ginson, OBE, BSc (Eng), MInstCE.

Woolwich.—POINT BLOCKS.—HC recommend that Norman & Dawbarn, FF.RIBA, 7, Portland-place, W1, should be appointed architects for the proposed five eleven-storey point blocks of flats to be erected in the vicinity of Frances-st., Chapel Hill and Samuel-st., SE18, as part of the St. Mary's comprehensive redevelopment scheme. Each block is expected to provide 40 to 42 flats.

(PROVINCIAL)

Billingham-on-Tees.—UDC to carry out £139,390 sewage and sewerage scheme in connection with Roseberry-rd. development. S: J. H. Shepherd.

Boldon, Co. Durham.—Wilkinson Bro., builders, High-st., Gateshead, to erect 12 houses at Whitburn-rd. and Woodlands-rd., Cleadon.—Principal Developments, Ltd., Haswell, Co. Durham, to erect 12 bungalows at The Hawthorns, East Boldon.

Cheltenham.—By-law and TP permission to Geo. Wimpey & Co., Ltd., for erection of 56 houses at Benhall Farm, Gloucester-rd.—Outline planning approval to Wheeler & Mansell, Ltd., for 23 dwellings at site adjoining "Hillside," Warden Hill-rd.

Cheltenham.—Boro' S submitted to HC sketch plans for eight-storey blocks of flats in "No Fines" construction at Arle and Hesters Way estates at est. cost £100,000 each block, including communal heating. Officers to obtain additional information as to construction and general level of rents from other authorities. Tender from Geo. Wimpey & Co., Ltd., for 54 dwellings at Princess Elizabeth-way expected in few weeks.

Chester-le-Street.—RDC considering question of building new Council offices, and report on suitable sites to be prepared.—NCB planning erection of headquarters offices at Team Valley trading estate. Board's A, Ashfield Towers, Gosforth, Northumberland.—British Oxygen Co., Ltd., to build maintenance workshop and extension to house boiler plant at Vigo-la.—William Leech, Ltd., builders, St. James-st., Newcastle, propose housing developments at Boundary Houses, Shiney-row.

Consett.—Work expected to begin in October on erection of sec. mod. sch. at Moorside for Durham CC. A: Newrick & Blackbell (F/F), 58, John-st., Sunderland.

Darlington.—EC received sanction to include second instalment (est. to cost £145,000) of new College of Further Education in its 1957-58 building programme. Boro' A.

Durham.—J. S. Glover, 13, Winchester-st., South Shields, has been appointed QS for proposed Sherburn sec. mod. sch. A: T. A. Page, Son & Hill (F/F), 75, King-st., South Shields.—R. H. Duns, Osborne-rd., Jesmond, appointed QS for second instalment of proposed technical college at Hebburn. County A.

Durham.—MofE has approved County EC's final plans for proposed Hartlepool West View mod. sch. to cost about £103,000. A: P. R. Middleton (A), 17, Albert-rd., Middlesbrough.

Easington, Co. Durham.—J. W. Cameron & Co., Ltd., Lion Brewery, West Hartlepool, to extend their "Murton Inn," providing for incorporation of two adjoining cottages into the premises. Firm's own A.—RDC considering report by S (R. R. Lumsden) regarding erection of shops. Sites stated to be available for 18 at Murton, 14 at Davis-ter., Easington, four at Beaumont-cres., Horden, six at Johnson estate, Wheatley Hill, and two at Donald-ave., South Hetton.—Sites being considered at Horden for erection of 24 houses.—Station Town, Seaham and Horden Co-op. Soc. to erect warehouse at Dunelm-rd., Thornley.

Leeds.—EC inviting tenders for Stage 1 of proposed Seacroft County sec. sch. A: Slater, Uren & Pike (F/F/A), 29, Gower-st., WC1.

British Waterways propose construction of new terminal at Knostrop, £250,000 est.

Middlesbrough.—EC expects to start work next April on erection of boys' and girls' high schools at Marton to cost £177,000 each. Education A: K. J. Caton (A).

Newbiggin-by-the-Sea.—UDC to acquire land for further 30 to 40 houses at Bull Fields site. It is also proposed to take about 30 acres of land on the Moor for housing purposes. S: H. W. Galley.

Newburn, Northumberland.—UDC to build 46 houses to rehouse slum dwellers. S: J. A. Weatherley.

Newcastle upon Tyne.—Following consultants have been appointed by EC in connection with erection of Kenton sec., mod. sch.: QS: Connell & Son, 25, New Bridge-st., Newcastle; structural consultants: L. G. Mouchel & Ptnrs., 9, Ellison-pl., Newcastle. A: Spence & Price (A/A), 26, St. Mary's-pl., Newcastle.

Newcastle upon Tyne.—Murray & Charlston, Ltd., engineers and motor car agents, College-ave., Newcastle, propose developing the site of disused Wingrove transport depot by erection of nine or ten shops, showroom and filling station with five flats or ten maisonettes above on West-rd. frontage.

Newcastle upon Tyne.—EC appointed J. W. Summers & Ptnrs., 33, Jesmond-rd., Newcastle, as QS for new Kenton prim. sch., and D. W. Cooper, Thorntree-drive, Lemington-on-Tyne, as structural engineer. A: Fielden & Wharfe, 27, Ridley-pl., Newcastle.

Wigan.—Wigan and District Mining and Technical College Joint Committee proposes extensions to Technical College, £350,000 est.—Norstel, Ltd., Swan-la., Hindley Green, propose erection of new factory and office adjacent to their works.

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TENDERS

* Denotes *accepted.*
† Denotes *provisionally accepted.*
‡ Denotes *recommended for acceptance.*
§ Denotes *accepted subject to modification.*
¶ Denotes *accepted by H.M. Government Departments.*

Alnwick.—Extensions to Alnwick sec. sch. *R. Costain, Great North-rd., Newcastle upon Tyne, £120,000.

Ashton-under-Lyne.—New factory and offices at Junction-st. industrial estate for T. Brown & Co., Ltd., 50, Wood-st., Ashton-under-Lyne. *Dean & Whipp, Ltd., Clarendon-rd., Hyde.

Bathgate.—34 houses in 14 blocks at Boghill and Kirkton development sites. A: John A. W. Grant, FRIAS, 36, Melville-st., Edinburgh. QS: Thomas Gilray, FRICS, 69, Castle-st., Edinburgh. Building works, *William Robertson & Sons, Ltd., Mid-st., Bathgate.

Belford.—Erection of houses at Lucker for RDC. A: K. Glover (F), Beadnell. *J. Sample & Sons, Warkworth, Northumberland, £24,848.

Bermondsey.—16 three-bedroomed flats and 16 bed/sitting-room flats at Block 1, Abbey-st. (North) site for MBC. *Direct labour, £68,507.

Brackley.—10 houses at Helmdon for RDC. *F. A. Hedges, Syresham, Brackley, £15,121.

Cheltenham.—18 houses and six flats at Cobham-rd. for BC. *F. & B. B. Griffiths, Ltd., £40,987 (subject to MH&LG approval).

*†**Chislehurst and Sidcup.**—18 flats, etc., Mottingham-rd., Mottingham, for UDC. E&S: W. B. Farrow, Bsc, AMICE, MIMunE. *W. J. Eaglen, Ltd., 6/8, Dorset-rd., Mottingham, £36,014 (subject to Ministry approval).

Derbyshire.—Erection of Hatton county prim. sch. for CC. *J. H. Fryer, Ltd., Derby.

Dover.—Eight houses at Aycliffe estate for TC. *Hedgecock Bros., £10,653.

Durham.—New pithead baths at Esh Colliery. Plans by NCB Architects' Dept., Ashfield Towers, Gosforth. *Gordon Durham & Co., Ltd., East Boldon, Co. Durham.

Eccles.—New metallurgical block at Vulcan Works, Green-la., Patricroft, for Mitchells, Shackleton & Co., Ltd. *Ernest Tonge & Sons, Ltd., Swinton, nr. Manchester.

Gateshead.—New premises at Mulgrave-ter. for United Services Club. A: Arthur & Kirkup (L), 13, Swinburne-st., Gateshead. *Thomes Armstrong, Ltd., Shields-rd., Newcastle upon Tyne.

Gatwick Airport.—Runway, taxi-tracks, hardstandings, drainage and ancillary civil engineering works for Ministry of Transport & Civil Aviation. Cons. engrs.: Frederick S. Snow & Ptnrs., Monro-bldg., Wellington-st., WC2. *Sir Alfred McAlpine & Son, Ltd., Little Sutton, Wirral, Ches.. "Something under £2 million."

Glendale (Northumberland).—Contract No. 2 in connection with RDC's regional water supply scheme, including concrete intake, at Carey Burn, 120,000 gall. reservoir at Wooler, laying four miles of 6-in. and 8-in. dia. water mains, etc. Constg. engrs.: Waterhouse & Rounthwaite, 165, Westmorland-rd., Newcastle upon Tyne. *C. G. Inkster, Faikes-st., Alnwick, £50,184.

Greenock.—16 houses at Kerr-pla. Development. A: Robert L. Rankin, AMPTI, AMInstCE, Municipal-bldgs., Wallace-sq., Greenock. *Weirs Housing Corpn., Ltd., Calder-st., Whifflet, Bellshill. (Subject to Department of Health for Scotland approval.)

Hemsworth.—30 three-bedroomed houses at South Elmsall for RDC. E&S: S. Price, FFS(Eng.), MRSH. *G. H. Smickersgill, Wath-on-Dearne.

Heywood.—96 flats at Hardfield estate for TC. *James Hobson & Sons, Ltd., 55, Newark-st., Nottingham, £99,750.

Ince-in-Makerfield.—New junior and infants' sch. for C of E authorities. *P. Hamer, Ltd., Park-st., Swinton.

Irthlingborough.—18 houses for UDC. *W. Thompson & Sons, Ltd., Irthlingborough, £24,534.

Liverpool.—New factory at Moorgate-rd., Kirby industrial estate for AC Delco Division of General Motors, Ltd. *Lloyd & Cross, Ltd., Argyle-st., Birkenhead.

¶London (Air Ministry).—New works Contracts to value £500 or over for week ended June 2:—

Artificers work: *Brown Fraser & Co., Ltd., 24, Durward-ave., Shawlands, Glasgow. *Building work:* *Pat Pateman & Son, Ltd., Limehurst-ave., Loughborough, Leicester; *F. Shepherd & Son, Ltd., Blue Bridge-la., York. *Painting work:* *M. G. Baxter, Ltd., 28, Market-st., Kilsyth, Glasgow; *Reid Bros., Durranhill Industrial Estate, Durranhill-rd., Carlisle (three contracts); *Modern Decorations (Horsforth), Ltd., Stanhope-drive, Horsforth, nr. Leeds; *Gilmours (Manchester), Ltd., 210, Higher-rd., Urmston, Manchester; *Catons (Painters), Ltd., 29, Washway-rd., Sale, Ches.; *Geo. Jones & Son (Contrs.), Ltd., 91, Everton-rd., Liverpool, 6; *F. Parkinson, Ltd., Mowbray-drive, Blackpool, Lancs; *M. A. Appleton (Contrs.), Ltd., 22, Bilston-st., Wolverhampton (two contracts); *C. & J. Seddon, Ltd., Coronation-bldgs., Little Hulton Walden, Manchester (three contracts); *Messrs. Singleton (Decorators), Ltd., 21, Silver-st., Doncaster, Yorks. *Extension heating mains:* *J. Jeffreys & Co., Ltd., St. Georges-hse., 195-203, Waterloo-rd., SE1. *Building work:* *Haymills (Contrs.), Ltd., Hanger Green, Western-ave., W5. *Extension of runway:* *Robert M. Douglas (Contrs.), Ltd., 395, George-rd., Erdington, Birmingham, 23. *Restore hanger:* *Robert Watson & Co. (Constructional Engineers), Filton, Bristol.

¶London (British Railways).—Contracts placed by Eastern Region:—*Bernard Pumfrey, Ltd., Wintern Works, Lea-rd., Gainsborough, Lincs., construction of new staff accommodation at Frodingham New Yard. *Air Survey Co., Ltd., 24, Bruton-st., W1, aerial survey of British Railways tracks, works and property, together with adjacent lands between approximately 29 miles 70 chains north-east of Chelmsford station and Clacton-on-Sea and Walton-on-Naze stations. *Standard Telephones & Cables, Ltd., Oakleigh-rd., New Southgate, N11, supply and installation of control equipment at Finsbury Park. *William Jones, Ltd., 1 Fitzroy-sq., W1, renewal of drainage, reballasting of permanent way and lifting of footbridge No. 31 between Waddington and Lincoln. *Leonard Fairclough, Ltd., Gordon House-rd., NW5, construction of foundation beams for Goliath crane track at Chesterton junction central permanent way depot. *John G. Clixby & Co., 64, Wilkinson-st., Sheffield, cleaning and painting of station buildings, signals, signal boxes, linework and bridges, etc., at Sheffield (Midland), Attercliffe-rd. and Brightside stations, etc. *Butterley Co., Ltd., Butterley, nr. Derby, reconstruction of superstructure of underline bridge No. 80 at 24 miles 40 chains over Great North-rd. (Route A.1) between Tuxford Central (closed) and Fledborough (closed). *A. J. Binns, Ltd., Harvest Works, 99, St. Pauls-rd., N1, supply and erection of lineside fencing in Ipswich district.

¶London (Metropolitan Police).—External painting and repair, Chigwell Hall, Chigwell. *C. J. Smith (Abridge), Ltd., £2,494.

¶London (MoH).—Contracts placed for week ending May 26:—*Bedfordshire:* MOS, Sharnbrook, erection of ten extra houses, *W. T. Revitt, Ltd., Newton-st., Olney, Bucks. HPO, Luton, alterations for telephone exchange equipment, *Building Contractors (Luton), Ltd., Church-st., Luton. *Durham:* Ministry of Health, Dunston Hill Hospital, Gateshead, adaptations to main kitchen, *J. G. Spotswood, Ltd., 2, Heaton-rd., Newcastle-on-Tyne. *Gloucestershire:* SAB, Vassall-rd., Fishponds, Bristol, alterations to spurs A, B, C, H, I, J, K and L, *H. C. Wakefield & Sons, Ltd., Merstham-rd., Bristol, 2. *Lanarkshire:* Hill-st., Wishaw, erection of Post Office telephone exchange, *J. Crawford & Sons, Ltd., 14, Woodside-ter., Glasgow, C3. *London:* Belgravia, SW1, erection of telephone exchange, *Humphreys, Ltd., Knightsbridge, SW1. *Northumberland:* Government Buildings, 81, St. Mary's-pl., Newcastle-on-Tyne, refelting and renewal of roof lights. *J. G. Spotswood, Ltd., 2, Heaton-rd., Newcastle-on-Tyne. *Surrey:* Veterinary Research Laboratory, Weybridge, erection of incinerator building, *Lavender McMillan (Contrs.), Ltd., 54, Cheam Common-rd., Worcester Park, Surrey.

¶London (War Dept.).—Works contracts placed in week ended May 26:—*Berkshire:* Painting and decorating, *F. Labbett & Sons, Ltd., Nottingham. *Cumberland:* Roadwork, *H. V. Smith & Co., Ltd., Edinburgh. *Hampshire:* Roof repairs, *Manchester Slate Co., Ltd., Manchester. *Kent:* Roof repairs, *C. Jenner & Son, Ltd., Folkestone. *London:* Electrical installation, *T. Clarke & Co., Ltd., London. *Oxfordshire:* Civil engineering, *Y. J. Lovell & Son, Ltd., Gerrards Cross. *Surrey:* Miscellaneous, *William Blood, Ltd., London.

Lydney, Glos.—12 old people's bungalows at Klondyke site for RDC. *Reema Construction, Ltd.

Manchester.—Single-storey extension to finishing department at Clayton Dye Works, Clayton-la., Clayton, for Walkden Makin & Co., Ltd. *Young & Edgar, Ltd., 83/85, Lower Broughton-rd., Salford.

Morpeth.—40 bungalows at High Stanners for TC. Boro' E: F. K. Perkins. *James Dodds & Sons, Dark-la., Morpeth.

Nantwich.—26 houses at Wardle and eight bungalows at Wybunbury estate for RDC. *Joseph Finney & Sons, Ltd., St. George's-rd., Winsford, £36,524 and £10,783.

Newcastle upon Tyne.—Public house at Lonsdale-ter. for James Deuchar, Ltd., Eldon-sq., Newcastle. A: S. H. Lawson (F), Emerson-chmbrs., Blackett-st., Newcastle. *J. & W. Lowry, Bath-la., Newcastle.

Northants.—Erection of Guilsborough sec. mod. sch. for CC. *Bosworth & Wakeford, Ltd.

Nottingham.—200 Canadian-type houses and bungalows at Radcliffe-on-Trent, for families of RCAF men at Langar. *Spooners (Hull), Ltd., Glebe-rd., Stoneferry, Hull.

Notts.—Erection of Sconce Hills sec. mod. sch. for EC. *W. J. Simms, Son & Cooke, Ltd., Haydn-rd., Nottingham, £57,358.

Preston.—New steel bridge across river Ribble and A.59 trunk road on new Preston by-pass motorway at Samlesbury for Lancashire CC (as agents for Ministry of Transport & Civil Aviation). *Cleveland Bridge & Engineering Co., Ltd., Darlington, £334,430.

Southwark.—Seven-storey block of offices with showrooms at ground floor level at junction of Newington Causeway and Lancaster-st., SE1, for Ministry of Works, for occupation by Board of Inland Revenue. A: K. W. Bland, ARIBA. Constg. engrs.: W. V. Zinn & Associates. *Wates, Ltd., London-rd., Norbury, SW16.

Stanley, Co. Durham.—32 houses at South Stanley for UDC. Plans by S. *Direct labour, £49,984.

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Stockport.—Erection of superstructure for new police headquarters at John-st. for BC. *W. J. Simms, Son and Cooke, Ltd., Haydn-rd., Nottingham, £131,209.

Stockton-on-Tees.—12 bungalows at Roseberry-cres., Norton House estate. *Kendrews, Ltd., Roseberry-rd., Norton, Malton, Yorks.

Sunderland. — Rebuilding war-damaged garages and offices in Tatham-st. for J. Moon. *G. H. Plemper, Ltd., Old Chester-rd., Sunderland.

Tiverton.—Works at Westfield (Westexe South) site for TC: 40 flats, *Slater & Tidball, £43,041; seven houses, *Coleman & Co., £11,634.

Tottenham.—Works for BC:—Seven-storey Y-shaped block of 40 flats at The Hale, N17, Boro' A: V. A. P. Jolley (A), *C. J. Manning (Builders), Ltd., Barking.—12 flats at Forster-row and 12 at Chestnut-rd., *P. G. Evans & Son, Ltd., 361, High-rd., Walthamstow, E17.

Tynemouth.—30 houses and flats at Redburn View for TC. Boro' E. *J. H. Rogers, Regent-ter., North Shields, £41,521.

Tynemouth.—Factory and garage at Nerham-rd., North Shields, for Charles Clay, Ltd. *T. W. Grey & Son, Front-st., Tynemouth.

Wallsend.—Erection of RC infants' sch., Churchill-st. A: Robert Burke (L), 10, Lambton-rd., Newcastle. *S. Hann, Fairfield-dr., Cullercoats, Tynemouth.

Wallsend.—Erection of research workshop for Parsons Marine Turbine Research and Development Assn. Constg. engr.: R. T. James & Ptnrs., Clavering-pl., Newcastle. *Purdie Lumsden & Co., Ltd., Oxford-st., Newcastle upon Tyne.

Wellingborough.—Works for RDC:—Six houses and 10 bungalows at Bozeat, 10 bungalows at Irchester, and 12 bungalows and six houses at Wollaston. *A. Underwood, York-rd., Wollaston, £19,704, £11,157 and £21,966.—Six bungalows at Earls Barton. *F. Buckley, Earls Barton, £6,994.—Four bungalows and eight houses at Earls Barton and six houses at Irchester. *H. A. Garrod, Ltd., 69, Melton-rd. North, Wellingborough, £15,345 and £8,145.—Four houses and two bungalows at Grendon. *Elliott & Dobbs, 63, High-st., Bozeat, Wellingborough, £7,980.

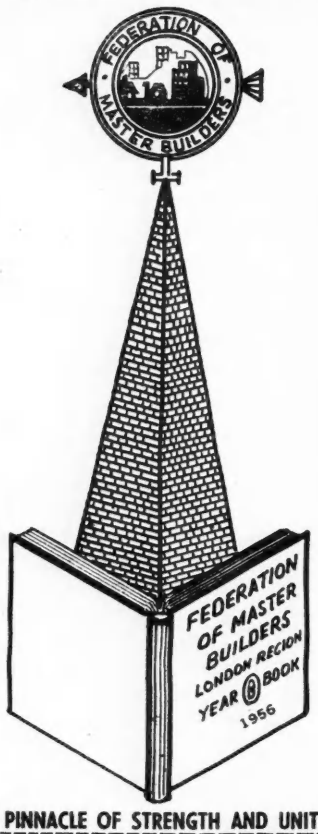
Wolverhampton.—Extensions to works and erection of new offices at Graisley Row for S. J. E. Fellows, Ltd. *Hy. Willcock & Co., Ltd., Darlington-st., Wolverhampton.

Woolwich.—Eight flats at Kingsdale-rd., Plumstead, SE18, for MBC. Boro' E&S, QS: Frank N. Falkner & Ptnrs., 39, Bedford-sq., WC1. ‡Direct labour, £19,763.—16 maisonettes at 218/238, Woolwich Church-st., SE18. ‡Direct labour, £33,038.

Woolwich.—Nine shops, public house, with 11 flats or maisoxettes over at St. Mary's comprehensive development area for MBC. Boro' E&S: W. H. Ginson, OBE, BSc(Eng), MInstCE. QS: Frank N. Falkner & Ptnrs., 39, Bedford-sq., WC1. ‡Direct labour, £48,824.

Worksop.—200 houses at Kilton Hill estate for BC. *J. J. & A. R. Jackson, Ltd., 438, Gateford-rd., Worksop, £230,893.

Yeovil.—Eight houses at Brooks-rd. for UDC. *B. R. Stevens, £10,760.



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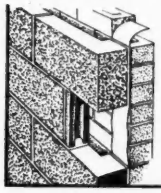
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